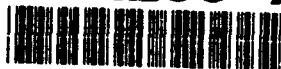


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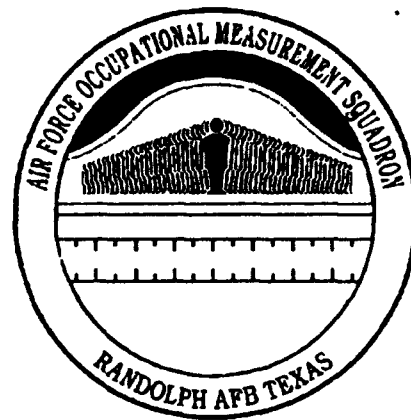
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UNITED STATES  
AIR FORCE



# OCCUPATIONAL SURVEY REPORT

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DENTAL LABORATORY CAREER LADDER

AFSC 4Y1X1

AFPT 90-982-010

AUGUST 1994

OCCUPATIONAL ANALYSIS PROGRAM  
AIR FORCE OCCUPATIONAL MEASUREMENT SQUADRON  
AIR EDUCATION and TRAINING COMMAND  
1550 5th STREET EAST  
RANDOLPH AFB, TEXAS 78150-4449

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# TABLE OF CONTENTS

	<b>PAGE NUMBER</b>
<b>PREFACE</b> .....	vi
<b>SUMMARY OF RESULTS</b> .....	viii
<b>INTRODUCTION</b> .....	1
Background.....	1
<b>SURVEY METHODOLOGY</b> .....	2
Inventory Development.....	2
Survey Administration.....	2
Survey Sample.....	3
Task Factor Administration.....	3
<b>SPECIALTY JOBS (Career Ladder Structure)</b> .....	6
Overview of Specialty Jobs.....	7
Group Descriptions.....	7
Comparison of Current Group Descriptions to Previous Study.....	23
<b>ANALYSIS OF DAFSC GROUPS</b> .....	23
Skill-Level Descriptions.....	27
Summary.....	33
<b>ANALYSIS OF AFMAN 36-2108 SPECIALTY DESCRIPTIONS</b> .....	33
<b>TRAINING ANALYSIS</b> .....	33
First-Enlistment Personnel.....	33
TE and TD Data.....	36
Specialty Training Standard (STS).....	41
AFSC 4Y1X1 STS.....	41
Plan of Instruction (POI).....	43
<b>JOB SATISFACTION ANALYSIS</b> .....	47
<b>IMPLICATIONS</b> .....	52

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**TABLE OF CONTENTS**  
(Tables, Figures, Appendices)

	<b><u>PAGE NUMBER</u></b>
<b>TABLE 1</b> MAJCOM REPRESENTATION IN SAMPLE .....	4
<b>TABLE 2</b> PAYGRADE DISTRIBUTION OF SAMPLE .....	4
<b>TABLE 3</b> AVERAGE PERCENT TIME SPENT ON DUTIES BY CAREER LADDER JOBS .....	9-10
<b>TABLE 4</b> SELECTED BACKGROUND DATA FOR CAREER LADDER JOBS .....	11-12
<b>TABLE 5</b> AVERAGE PERCENT MEMBERS PERFORMING TASK MODULES BY CAREER LADDER JOBS .....	14-15
<b>TABLE 6</b> SPECIALTY JOB COMPARISONS BETWEEN CURRENT AND 1988 SURVEYS .....	24
<b>TABLE 7</b> DISTRIBUTION OF MEMBERS BY DAFSC ACROSS CAREER LADDER JOBS (PERCENT) .....	25
<b>TABLE 8</b> TIME SPENT ON DUTIES BY MEMBERS OF DAFSC GROUPS (RELATIVE PERCENT OF JOB TIME) .....	26
<b>TABLE 9</b> REPRESENTATIVE TASKS PERFORMED BY DAFSC 4Y131 PERSONNEL .....	28
<b>TABLE 10</b> REPRESENTATIVE TASKS PERFORMED BY DAFSC 4Y151 PERSONNEL .....	29
<b>TABLE 11</b> TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 4Y131 AND 4Y151 PERSONNEL (PERCENT MEMBERS PERFORMING) .....	30
<b>TABLE 12</b> REPRESENTATIVE TASKS PERFORMED BY DAFSC 4Y171 PERSONNEL .....	31
<b>TABLE 13</b> TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 4Y151 AND DAFSC 4Y171 PERSONNEL (PERCENT MEMBERS PERFORMING) .....	32
<b>TABLE 14</b> RELATIVE PERCENT OF TIME SPENT ACROSS DUTIES BY FIRST- ENLISTMENT AFSC 4Y1X1 PERSONNEL .....	34
<b>TABLE 15</b> REPRESENTATIVE TASKS PERFORMED BY FIRST-ENLISTMENT PERSONNEL .....	35
<b>TABLE 16</b> EQUIPMENT ITEMS USED BY MORE THAN 40 PERCENT OF FIRST-JOB OR FIRST-ENLISTMENT PERSONNEL .....	37
<b>TABLE 17</b> SAMPLE OF TASKS WITH HIGHEST TRAINING EMPHASIS RATINGS .....	39
<b>TABLE 18</b> SAMPLE OF TASKS WITH HIGHEST TASK DIFFICULTY RATINGS .....	40
<b>TABLE 19</b> EXAMPLES OF STS ITEMS NOT SUPPORTED BY OSR DATA .....	42
<b>TABLE 20</b> EXAMPLES OF TECHNICAL TASKS WITH HIGH TE PERFORMED BY 20 PERCENT OR MORE AFSC 4Y1X1 GROUP MEMBERS AND NOT REFERENCED TO THE STS .....	44

**TABLE OF CONTENTS (CONTINUED)**  
(Tables, Figures, Appendices)

	<b><u>PAGE NUMBER</u></b>
<b>TABLE 21</b> EXAMPLES OF POI OBJECTIVES NOT SUPPORTED BY OSR DATA .....	45
<b>TABLE 22</b> EXAMPLES OF TECHNICAL TASKS PERFORMED BY 30 PERCENT OR MORE AFSC 4Y1X1 GROUP MEMBERS AND NOT REFERENCED TO THE POI.....	46
<b>TABLE 23</b> COMPARISON OF JOB SATISFACTION INDICATORS FOR TAFMS GROUPS IN CURRENT SURVEY TO A COMARATIVE SAMPLE (PERCENT MEMBERS RESPONDING).....	48
<b>TABLE 24</b> COMPARISON OF JOB SATISFACTION INDICATORS FOR TAFMS GROUPS IN CURRENT SURVEY TO PREVIOUS SURVEY (PERCENT MEMBERS RESPONDING).....	49
<b>TABLE 25</b> JOB SATISFACTION INDICATORS FOR JOBS (PERCENT MEMBERS RESPONDING).....	50-51
 <b>FIGURE 1</b> MAJCOM DISTRIBUTION .....	 5
<b>FIGURE 2</b> JOBS PERFORMED BY ALL AFSC 4Y1X1 PERSONNEL .....	8
<b>FIGURE 3</b> JOBS PERFORMED BY FIRST-ENLISTMENT AFSC 4Y1X1 PERSONNEL .....	38
<b>APPENDIX A</b> REPRESENTATIVE TASKS PERFORMED BY MEMBERS OF CAREER LADDER JOBS.....	53
<b>APPENDIX B</b> LISTING OF MODULES AND TASK STATEMENTS .....	55

## **PREFACE**

This report presents the results of an Air Force Occupational Survey of the Dental Laboratory career ladder (AFSC 4Y1X1). Authority for conducting occupational surveys is contained in AFI 36-2623. Computer products used in this report are available for use by operations and training officials.

Chief Master Sergeant Jeffrey L. Milligan, Inventory Development Specialist, developed the survey instrument. First Lieutenant Trevor D. Staiger, Occupational Analyst, analyzed the data and wrote the final report. Mr. Wayne Fruge provided computer programming support, and Mr. Richard G. Ramos provided administrative support. Major Randall C. Agee, Chief, Airman Analysis Section, Occupational Analysis Flight, Air Force Occupational Measurement Squadron (AFOMS), reviewed and approved this report for release.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies are available upon request to AFOMS, Attention: Chief, Occupational Analysis Flight (OMY), 1550 5th Street East, Randolph AFB Texas 78150-4449 (DSN 487-6623).

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## SUMMARY OF RESULTS

1. Survey Coverage: The Dental Laboratory (AFSC 4Y1X1) career ladder was surveyed to obtain data needed to update AFMAN 36-2108 Specialty Training Standards (STS), Career Development Courses, Specialty Knowledge Tests, and the training courses. Survey results are based on 399 responses from AFSC 4Y1X1 personnel, which constitute 71 percent of the assigned population.
2. Specialty Jobs: Structure analysis identified one job cluster and seven jobs: Base Dental Lab cluster, Orthodontic Appliance Fabricator job, Fixed Restoration Fabricator job, Crown Fabricator job, Area Dental Laboratory (ADL) Ceramic Prostheses Fabricator job, Removable Partial Denture (RPD) Fabricator job, Supply job, and Dental Laboratory NCOIC and Superintendent job. Clusters and jobs are discussed within this report.
3. Career Ladder Progression: Personnel in the Dental Laboratory career ladder show a typical pattern of career progression. Three-skill level personnel perform essentially technical tasks. At the 5-skill level, a moderate shift towards supervisory functions occurs, with members still spending more than 85 percent of their job time performing technical duties. Seven-skill level personnel spend 35 percent of their duty time performing managerial and supervisory functions, showing an increase in responsibility as a result of experience. Specialty descriptions in AFMAN 36-2108 provide a broad and accurate overview of tasks and duties performed within the career ladder.
4. Training Analysis: A match of survey data to the AFSC 4Y1X1 STS identified 12 entries on the STS not supported by survey data. In addition to this, a similar match of data to the Plan of Instruction (POI) for the J3ABR4Y131-004 course revealed that seven POI learning objectives are not supported. Career ladder functional managers and training personnel should carefully review these unsupported STS and POI entries to justify their continued inclusion in the training documents.
5. Job Satisfaction Analysis: No serious job satisfaction problems appear to exist within this specialty. Overall, job satisfaction responses were slightly higher than those of a comparative sample of similar Air Force personnel surveyed in 1993.
6. Implications: The AFSC 4Y1X1 career ladder structure identified in this report is similar to that found in the 1988 Occupational Survey Report. The AFMAN 36-2108 Specialty Descriptions accurately describe the jobs and tasks performed by personnel at all skill levels, and overall satisfaction was positive for the jobs identified.

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**OCCUPATIONAL SURVEY REPORT (OSR)  
DENTAL LABORATORY CAREER LADDER  
(AFSC 4Y1X1)**

**INTRODUCTION**

This is a report of an occupational survey of the Dental Laboratory career ladder conducted by the Occupational Analysis Flight, Air Force Occupational Measurement Squadron (AFOMS). This survey was conducted in order to provide current data for routine updating of the career ladder training programs. The last survey pertaining to this career ladder was published in August 1988 (AFSC 982X0).

**Background**

As described in the AFMAN 36-2108 Specialty Descriptions for AFSC 4Y131/51/71, 3- and 5-skill level members fabricate and repair both dental and maxillofacial prostheses and appliances. This includes procedures to fabricate and repair complete dental prostheses; fixed and removable partial dental prostheses; individual crowns, inlays, pontics, splints, stabilizers, and space maintainers; using precious and nonprecious metals, acrylic resins, and porcelain as basic materials. Members also perform general dental laboratory administration tasks. These administrative tasks include: maintaining dental laboratory records; preparing reports on laboratory activities; and requisitioning, storing, and issuing dental laboratory supplies. It also includes accounting for expenditure of precious metals. They also perform inspections on dental lab operations and equipment. In addition, 7-skill members oversee the laboratory operations and provide technical expertise pursuant to fabricating and repairing: fixed and removable partial dental prostheses, complete dental prostheses, maxillofacial prostheses, and all other oral prostheses and mechanical devices.

Initial 3-skill level training for AFSC 4Y1X1 personnel is provided through a 23-week, 3-day course taught at Sheppard AFB TX. The Apprentice Dental Laboratory course, J3ABR4Y131-004, provides fundamental instruction for procedures accomplished in Air Force dental laboratories. That instruction includes training on: complete denture fabrication, acrylic base relines and repair, removable partial denture construction, crown and fixed partial denture construction, fabrication of orthodontic appliances, and specialized prostheses. Preventive maintenance and safety precautions for dental laboratory equipment are also stressed.

Entry into the career ladder currently requires an Armed Forces Vocational Aptitude Battery General score of 64 and a strength factor of G (40 lbs).

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## **SURVEY METHODOLOGY**

### **Inventory Development**

The data collection instrument for this occupational survey was USAF Job Inventory (JI) AFPT 90-982-010, dated June 1993. A tentative task list was prepared after reviewing pertinent career ladder publications and directives, and tasks from the last AFSC 982X0 OSR. The preliminary task list was refined and validated through personal interviews with 35 subject-matter experts (SMEs) representing MAJCOMs at the following locations:

BASE	UNIT AND REASON FOR VISIT
Sheppard AFB TX	Technical Training School
Barksdale AFB LA	2 MEDGP (one of four area dental laboratories)
Keesler AFB MS	Keesler Medical Center (2-year dental residency program)
Lackland AFB TX	Dunn Dental Clinic Mackown Dental Clinic (largest dental residency program)
Dyess AFB TX	96 MEDGP (typical small dental laboratory)
Goodfellow AFB TX	391 MEDSQ (typical small dental laboratory)

The resulting JI contained a comprehensive listing of 407 tasks grouped under 14 duty headings. A background section requested information such as grade, job title, time in present job, time in service, job satisfaction, facility assigned to, job title, and a list of equipment utilized in the performance of the incumbent's job.

### **Survey Administration**

From August through November 1993, Military Personnel Flights at operational bases nationwide administered the inventory to eligible AFSC 4Y1X1 personnel. Members eligible for the survey consisted of the total assigned 3-, 5-, and 7-skill level population, excluding the following: (1) hospitalized personnel; (2) personnel in transition for a permanent change of station; (3) personnel retiring during the time inventories were administered to the field; and (4)

personnel in their jobs less than 6 weeks. Participants were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Military Personnel Center.

Each individual who completed the inventory first filled in an identification and biographical information section and then checked each task performed in their current job. After checking all tasks performed, each individual rated each task on a 9-point scale showing relative time spent on that task as compared to all other tasks checked. The ratings ranged from 1 (very small amount time spent) through 5 (about average time spent) to 9 (very large amount spent).

To determine relative time spent for each task checked by a respondent, all of the incumbent's ratings are assumed to account for 100 percent of that member's time spent on the job and are summed. Each task rating is then divided by the total task ratings and multiplied by 100 to provide a relative percentage of time for each task. This procedure provides a basis for comparing tasks in terms of both percent members performing and average percentage of time spent.

### Survey Sample

Personnel were selected to participate in this survey to ensure an accurate representation across MAJCOMs and paygrades. Table 1 reflects the distribution percentages, by MAJCOM, of assigned AFSC 4Y1X1 personnel, as of July 1993. The 399 respondents in the final sample represent 71 percent of all assigned AFSC 4Y1X1 personnel. Table 2 reflects the distribution percentages by paygrade groups. The respondents are distributed proportionately across MAJCOMs and paygrades (see Tables 1 and 2 and Figure 1) and are somewhat representative of the assigned population. Assigned members in the United States Air Forces Europe were declining at the time the survey was being administered, due to the closure of a number of overseas bases. Many of those who have returned may have been assigned to Air Education and Training Command (AETC), which would account for the discrepancies noticed in Figure 1 and Table 1.

### Task Factor Administration

Job descriptions alone do not provide sufficient data for making decisions about career ladder documents or training programs. Task factor information is needed for a complete analysis of the career ladder. To obtain the needed task factor data, selected senior AFSC 4Y1X1 personnel (generally E-6 or E-7 technicians) also completed a second booklet for either training emphasis or task difficulty. These booklets were processed separately from the JIs. This information is used in a number of different analyses discussed in more detail within this report.

Training Emphasis (TE). TE is defined as the amount of structured training first-enlistment personnel need to perform tasks successfully. Structured training is defined as training provided by resident technical schools, field training detachments, mobile training teams, formal on-the-job

**TABLE 1****MAJCOM REPRESENTATION IN SAMPLE**

<u>PERCENT OF COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>SAMPLE</u>
ACC	31	32
AETC	23	29
USAFE	12	8
AMC	12	11
PACAF	11	11
AFMC	9	7
OTHER	2	2

TOTAL ASSIGNED = 565

TOTAL SURVEYED = 479

TOTAL IN SAMPLE = 399

PERCENT OF ASSIGNED IN SAMPLE = 71%

PERCENT OF SURVEYED IN SAMPLE = 83%

**TABLE 2****PAYGRADE DISTRIBUTION OF SAMPLE**

<u>PERCENT OF PAYGRADE</u>	<u>PERCENT OF ASSIGNED</u>	<u>SAMPLE</u>
E-1 TO E-3	18	17
E-4	31	32
E-5	29	30
E-6	13	12
E-7	7	7
E-8	2	2

# MAJCOM DISTRIBUTION



FIGURE 1

training, or any other organized training method. Thirty-eight Air Force dentists who supervise 4Y1X1 personnel, and 37 experienced NCOs rated the tasks in the inventory on a 10-point scale ranging from 0 (no training required) to 9 (extremely high amount of training required). The interrater agreement for these raters was acceptable. The average TE rating for AFSC 4Y1X1 was 2.97, with a standard deviation of 2.23. Any task with a TE rating of 5.20 or greater is considered to have a high TE. After separating and comparing the officer and NCO TE ratings, it was apparent that the combined interrater reliability was acceptable, and there were no differences in rating policies between the different groups.

Task Difficulty (TD). TD is defined as an estimate of the length of time the average airman takes to learn how to perform a task. Forty-one experienced AFSC 4Y1X1 NCOs rated the difficulty of the inventory tasks on a 9-point scale ranging from 1 (easy to learn) to 9 (very difficult to learn). Interrater agreement was again acceptable. TD ratings are normally adjusted so tasks of average difficulty have a value of 5.0, with a standard deviation of 1.0. Thus, any task with a TD rating of 6.00 or above is considered difficult to learn.

When used in conjunction with the primary criterion of percent members performing, TD and TE ratings can provide insight into first-term personnel training requirements. Such insights may suggest a need for lengthening or shortening portions of instruction supporting AFS entry-level jobs.

### **SPECIALTY JOBS** (Career Ladder Structure)

The first step in the analysis process is to identify the structure of the career ladder in terms of the jobs performed by the respondents. Comprehensive Occupational Data Analysis Programs (CODAP) assist by creating an individual job description for each respondent based on the tasks performed and relative amount of time spent on the tasks. The CODAP automated job clustering program then compares all the individual job descriptions, locates the two descriptions with the most similar tasks and time spent ratings, and combines them to form a composite job description. In successive stages, new members are added to this initial group, or new groups are formed based on the similarity of tasks and time spent ratings.

The basic group used in the hierarchical clustering process is the job. When two or more jobs have a substantial degree of similarity in tasks performed and time spent on tasks, they are grouped together and identified as a cluster. The structure of the career ladder is then defined in terms of jobs and clusters of jobs.



### Overview of Specialty Jobs

Based on the analysis of tasks performed and the amount of time spent performing each task, one cluster and seven jobs were identified within the career ladder. Figure 2 illustrates the jobs performed by AFSC 4Y1X1 personnel. A listing of these jobs is provided below. The stage (ST) number shown beside each title references computer-printed information; the letter ("N") stands for the number of personnel in each group.

- I. BASE DENTAL LAB (BDL) CLUSTER (STG26, N=271)
- II. ORTHODONTIC APPLIANCE FABRICATOR JOB (STG40, N=7)
- III. FIXED RESTORATION FABRICATOR JOB (STG75, N=25)
- IV. CROWN FABRICATOR JOB (STG33, N=11)
- V. AREA DENTAL LABORATORY (ADL) CERAMIC PROSTHESES FABRICATOR JOB (STG44, N=13)
- VI. REMOVABLE PARTIAL DENTURE (RPD) FABRICATOR JOB (STG17, N=19)
- VII. SUPPLY JOB (STG47, N=7)
- VIII. DENTAL LABORATORY NCOIC AND SUPERINTENDENT JOB (STG35, N=21)

The respondents forming these groups account for 94 percent of the survey sample. The remaining 6 percent were performing tasks or series of tasks which did not group with any of the defined jobs. Some of the job titles given by respondents which were representative of these personnel include: Superintendent of ADL Administration, Technical School Instructor, Career Development Course Writer, and Superintendent of Training.

### Group Descriptions

The following paragraphs contain brief descriptions of the one cluster and seven jobs identified through the career ladder structure analysis. Appendix A lists representative tasks performed by members with each job, Table 3 displays time spent on duties, and Table 4 provides demographic information for each job discussed within this report.

# JOBS PERFORMED BY ALL AFSC 4Y1X1 PERSONNEL

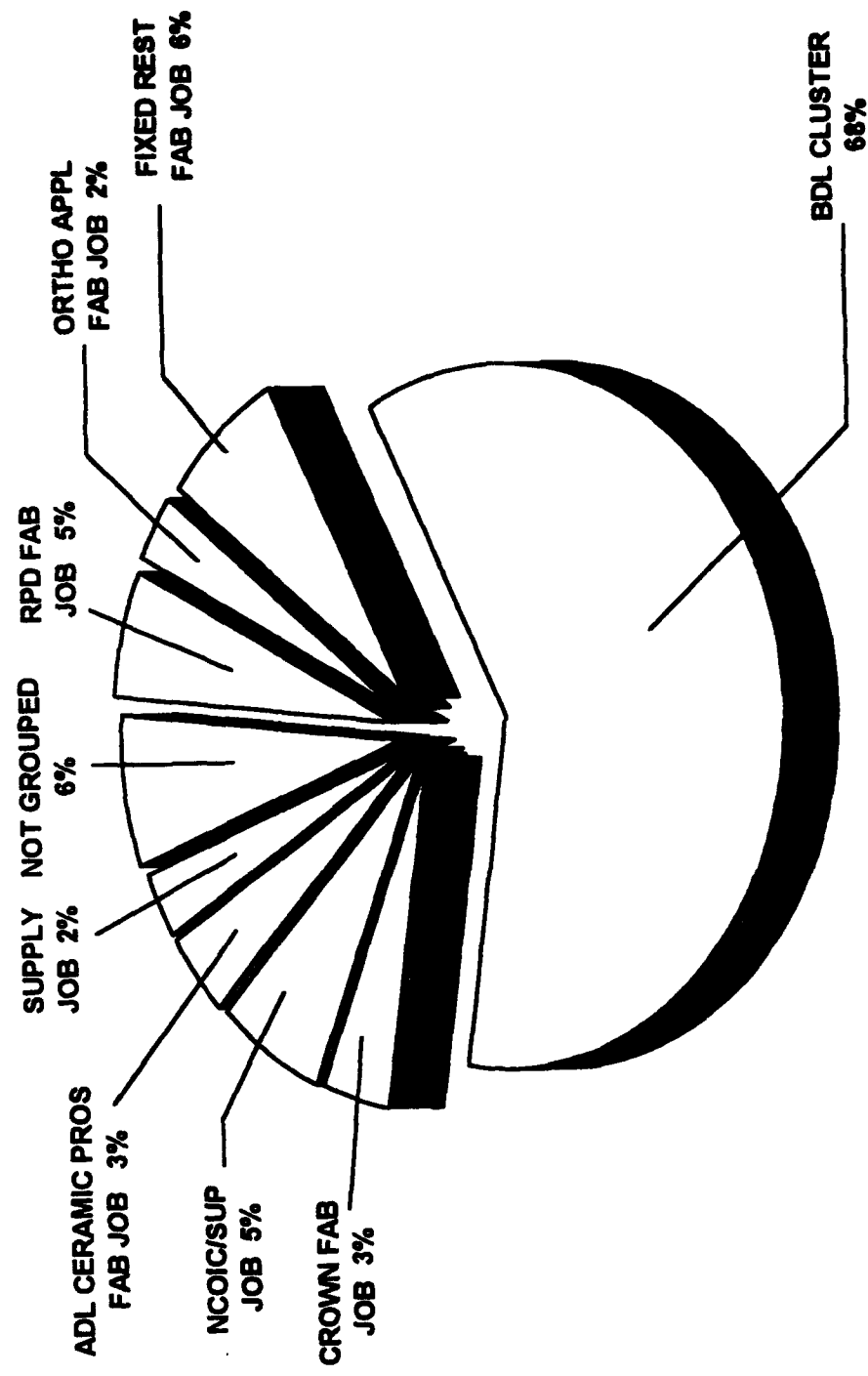


FIGURE 2

TABLE 3

## AVERAGE PERCENT TIME SPENT ON DUTIES BY CAREER LADDER JOBS

DUTIES	BASE DENTAL LAB (BDL) CLUSTER (STG26)	ORTHO APPLIANCE FABRICATOR JOB (STG40)	FIXED RESTOR FABRICATOR JOB (STG75)	CROWN FABRICATOR JOB (STG33)
A ORGANIZING AND PLANNING	3	*	1	1
B DIRECTING AND IMPLEMENTING	3	1	3	2
C INSPECTING AND EVALUATING	4	*	4	2
D TRAINING	3	1	3	3
E PERFORMING ADMINISTRATIVE ACTIVITIES	5	4	1	2
F PERFORMING SUPPLY ACTIVITIES	3	*	1	-
G PERFORMING GENERAL LABORATORY ACTIVITIES	27	62	14	8
H FABRICATING DENTURE BASES	14	*	-	-
I FABRICATING REMOVABLE PARTIAL DENTURE (RPD) FRAMEWORKS	1	1	-	-
J FABRICATING FIXED RESTORATIONS	20	5	66	67
K FABRICATING CERAMIC OR METAL-CERAMIC RESTORATIONS	8	*	*	1
L FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	3	7	*	-
M FABRICATING SPECIAL PURPOSE APPLIANCES	3	15	-	-
N PERFORMING MEDICAL READINESS ACTIVITIES	3	4	7	14

\* Denotes less than 1 percent

- Denotes no response

TABLE 3 (CONTINUED)

## AVERAGE PERCENT TIME SPENT ON DUTIES BY CAREER LADDER JOBS

DUTIES	ADL CERAMIC PROSTHESES FABRICATOR JOB (STG44)		RPD FABRICATOR JOB (STG17)		SUPPLY JOB (STG47)		DENTAL LAB NCOIC & SUPERINTENDENT JOB (STG35)	
A ORGANIZING AND PLANNING	1		4		9		16	
B DIRECTING AND IMPLEMENTING	3		5		7		18	
C INSPECTING AND EVALUATING	4		3		11		22	
D TRAINING	3		4		7		10	
E PERFORMING ADMINISTRATIVE ACTIVITIES	2		4		8		10	
F PERFORMING SUPPLY ACTIVITIES	-		1		44		4	
G PERFORMING GENERAL LABORATORY ACTIVITIES	7		16		5		4	
H FABRICATING DENTURE BASES	-		3		1		1	
I FABRICATING REMOVABLE PARTIAL DENTURE (RPD) FRAMEWORKS	-		46		*		1	
J FABRICATING FIXED RESTORATIONS	9		2		5		9	
K FABRICATING CERAMIC OR METAL-CERAMIC RESTORATIONS	63		*		*		2	
L FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	-		1		*		*	
M FABRICATING SPECIAL PURPOSE APPLIANCES	-		*		*		*	
N PERFORMING MEDICAL READINESS ACTIVITIES	8		11		3		3	

\* Denotes less than 1 percent

- Denotes no response

TABLE 4

## SELECTED BACKGROUND DATA FOR CAREER LADDER JOBS

	BASE DENTAL LAB (BDL) CLUSTER (STG26)	ORTHO APPLIANCE FABRICATOR JOB (STG40)	FIXED RESTOR FABRICATOR JOB (STG75)	CROWN FABRICATOR JOB (STG33)
NUMBER IN GROUP	271	7	25	11
PERCENT OF SAMPLE	68%	2%	6%	3%
DAFSC DISTRIBUTION				
4Y131	25%	86%	44%	73%
4Y151	58%	14%	52%	27%
4Y171	17%	0%	4%	0%
4Y191/00	0%	0%	0%	0%
PAYGRADE DISTRIBUTION				
E-1 TO E-3	14%	86%	40%	46%
E-4	33%	14%	20%	27%
E-5	34%	0%	32%	18%
E-6	13%	0%	8%	9%
E-7	6%	0%	0%	0%
E-8	0%	0%	0%	0%
E-9	0%	0%	0%	0%
AVERAGE NUMBER OF TASKS PERFORMED	129	34	22	29
AVERAGE MONTHS TAFMS	105	31	71	71
PERCENT IN FIRST ENLISTMENT	24%	87%	44%	63%
PERCENT SUPERVISING	44%	0%	20%	18%

TABLE 4 (CONTINUED)

## SELECTED BACKGROUND DATA FOR CAREER LADDER JOBS

	ADL CERAMIC PROSTHESES FABRICATOR JOB (STG44)	RPD FABRICATOR JOB (STG17)	SUPPLY JOB (STG47)	DENTAL LAB NCOIC & SUPERINTENDENT JOB (STG35)
NUMBER IN GROUP	13	19	7	21
PERCENT OF SAMPLE	3%	5%	2%	5%
DAFSC DISTRIBUTION				
4Y131	30%	26%	29%	0%
4Y151	62%	63%	57%	14%
4Y171	8%	11%	14%	57%
4Y191/00	0%	0%	0%	29%
PAYGRADE DISTRIBUTION				
E-1 TO E-3	15%	16%	0%	0%
E-4	38%	37%	43%	0%
E-5	38%	32%	43%	19%
E-6	9%	15%	0%	19%
E-7	0%	0%	14%	38%
E-8	0%	0%	0%	19%
E-9	0%	0%	0%	5%
AVERAGE NUMBER OF TASKS PERFORMED	44	36	65	86
AVERAGE MONTHS TAFMS	85	89	106	196
PERCENT IN FIRST ENLISTMENT	30%	36%	0%	0%
PERCENT SUPERVISING	38%	42%	43%	100%

Another way to illustrate these jobs is to summarize tasks performed into groups of tasks (task modules (TMs)). This allows for a very concise display of where job incumbents spend most of their time and thus develops a comprehensive overview of each job. The display shows the number of tasks included in a module, the average percent time spent on that module, a cumulative amount of time spent on the listed modules, and finally, an average percent of members performing the particular TM. These modules were identified through CODAP co-performance clustering. Representative TMs are listed as a part of the job description. The list of modules with respective tasks is presented in Appendix B. Table 5 provides data showing the percent members performing within selected TMs from each job identified in the study.

I. BASE DENTAL LAB (BDL) CLUSTER (STG26, N=271). This is the core job of the career ladder, performed by 68 percent of the respondents. The overall mission of this job is to fabricate and repair dental prostheses to include crowns, inlays, and fixed partial dentures. Due to the small number of people working in the different BDLs, personnel must be generalists, as opposed to their more specialized counterparts who work in the ADLs. This is the broadest job in the career ladder, as personnel perform an average of 129 tasks. They spend more than 60 percent of their job time in three technical duty areas: performing general laboratory activities; fabricating fixed restorations; and fabricating denture bases. Representative tasks performed by members within this cluster include:

- invest wax patterns
- construct working casts with removable dies using Pindex-type systems
- sprue wax patterns for fixed restorations
- seat castings
- finish and polish fixed restorations
- recover castings
- wax patterns for fixed restorations
- cast conventional gold alloys
- burnout wax patterns
- perform user maintenance on dental laboratory equipment

As the core job of this specialty, incumbents include a broad range of experience levels, from tech school graduate through moderately experienced technician. The job is performed mostly by personnel in paygrades E-4 through E-6, holding the 3- and 5-skill level, and averaging slightly less than 9 years time in service.

This cluster contains two jobs which are distinguished from each other due to the different functions which they perform. The first job, Crown and Fixed Restoration, is highly involved with sprueing, burning out, and investing wax patterns for fixed restorations. In addition, personnel with this job also perform tasks such as seating castings, recovering castings, and casting conventional gold alloys for crown. The other job, Denture Base Fabricators, is similar to the

TABLE 5

## AVERAGE PERCENT MEMBERS PERFORMING TASK MODULES BY CAREER LADDER JOBS

TASK MODULE	BASE DENTAL LAB (BDL) CLUSTER (STG26)	ORTHO APPLIANCE FABRICATOR JOB (STG40)	FIXED RESTOR FABRICATOR JOB (STG75)	CROWN FABRICATOR JOB (STG33)
0001 DENTAL LAB DOCUMENTATION	55	25	18	25
0002 GENERAL LAB MAINTENANCE	81	71	25	25
0003 FIXED RESTORATION FABRICATION	74	12	47	58
0004 FIXED RESTORATION SOLDERING	50	6	2	65
0005 PRECIOUS METAL DUTIES	57	-	2	11
0006 CERAMIC AND PORCELAIN DUTIES	53	-	-	1
0007 WAX PATTERN DUTIES	38	-	38	13
0008 ORTHODONTIC APPLIANCE FABRICATION	75	60	5	3
0009 DENTURE REPAIR AND FABRICATION	69	6	-	-
0011 MEDICAL READINESS ACTIVITIES	41	26	16	30
0012 DENTURE BASE FABRICATION	24	7	-	-
0013 WORKCENTER MANAGEMENT	35	-	14	16
0014 QUALITY ASSURANCE ACTIVITIES	28	1	2	2
0015 SUPERVISION DUTIES	12	-	1	-
0017 INSPECTION AND EVALUATION	17	-	-	-
0018 SUPPLY ACTIVITIES	27	-	2	-
0019 FINANCIAL MANAGEMENT	19	-	1	-
0020 FINANCIAL DOCUMENTATION	6	-	-	-
0022 CERAMIC FABRICATION	16	-	-	5
0024 CIVILIAN MANAGEMENT	5	-	-	-
0029 TRAINING PROGRAM MANAGERS	13	4	-	2
0031 REMOVABLE PARTIAL DENTURE FABRICATION	8	-	-	-
0032 METAL DENTURE BASE FABRICATION	3	-	-	-

- Indicates less than 1 percent



TABLE 5 (CONTINUED)

## AVERAGE PERCENT MEMBERS PERFORMING TASK MODULES BY CAREER LADDER JOBS

TASK MODULE	ADL CERAMIC PROSTHESES FABRICATOR JOB (STG44)		RPD FABRICATOR JOB (STG17)		SUPPLY JOB (STG47)		DENTAL LAB NCOIC & SUPERINTENDENT JOB (STG35)	
0001 DENTAL LAB DOCUMENTATION	29		29		37		70	
0002 GENERAL LAB MAINTENANCE	31		35		23		27	
0003 FIXED RESTORATION FABRICATION	25		6		22		35	
0004 FIXED RESTORATION SOLDERING	8		2		-		17	
0005 PRECIOUS METAL DUTIES	8		-		37		18	
0006 CERAMIC AND PORCELAIN DUTIES	94		-		10		22	
0007 WAX PATTERN DUTIES	8		-		23		10	
0008 ORTHODONTIC APPLIANCE FABRICATION	5		5		13		11	
0009 DENTURE REPAIR AND FABRICATION	-		4		13		8	
0011 MEDICAL READINESS ACTIVITIES	38		37		27		25	
0012 DENTURE BASE FABRICATION	-		4		-		-	
0013 WORKCENTER MANAGEMENT	24		19		27		83	
0014 QUALITY ASSURANCE ACTIVITIES	5		6		12		71	
0015 SUPERVISION DUTIES	5		11		6		61	
0017 INSPECTION AND EVALUATION	4		4		18		45	
0018 SUPPLY ACTIVITIES	-		1		98		22	
0019 FINANCIAL MANAGEMENT	-		3		68		49	
0020 FINANCIAL DOCUMENTATION	-		-		89		10	
0022 CERAMIC FABRICATION	74		-		-		4	
0024 CIVILIAN MANAGEMENT	-		3		-		35	
0029 TRAINING PROGRAM MANAGERS	8		5		7		35	
0031 REMOVABLE PARTIAL DENTURE FABRICATION	-		62		-		7	
0032 METAL DENTURE BASE FABRICATION	-		34		-		4	

- Indicates less than 1 percent

previous one; however, it is much more involved with denture base fabrication. Personnel spend more time performing such tasks as flasking and deflasking complete dentures or RPDs, finishing and polishing denture bases, and arranging artificial teeth.

Representative modules comprising the majority of job time for this cluster are listed below. Accompanying the TM numbers and the module titles are: (1) the number of tasks included in the module, (2) the sum of time spent by all members of the cluster performing tasks in the module, (3) the cumulative time spent by the cluster as each module is added, and (4) the average of the percent members performing all the tasks in each module. Refer to Appendix B to reference the tasks contained within each module.

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0003	FIXED RESTORATION FABRICATION	21	16	16	74
0009	DENTURE REPAIR AND FABRICATION	25	13	29	69
0008	ORTHODONTIC APPLIANCE FABRICATION	18	12	41	75
0006	CERAMIC AND PORCELAIN DUTIES	14	7	48	53
0002	GENERAL LAB MAINTENANCE	5	4	52	81
0005	PRECIOUS METAL DUTIES	5	2	54	57

This table clearly shows the emphasis of the general laboratory tasks in this cluster, along with the distinct job variations contained within the cluster.

II. ORTHODONTIC APPLIANCE FABRICATOR JOB (STG40, N=7). Members with this highly specialized job are responsible for the fabrication of special orthodontic appliances. Incumbents perform an average of 34 tasks which include fabricating athletic mouthguards, Hawley retainers, and bleaching stents. They also construct custom impression trays and diagnostic casts. This job is distinguished from that of the Base Dental Lab cluster by the amount of time spent on orthodontic appliance-specific tasks. The following are typical tasks members with the job perform:

- fabricate athletic mouthguards
- disinfect appliances
- construct diagnostic casts, other than orthodontic study casts
- construct custom impression trays for removable prosthodontics
- fabricate bleaching stents
- articulate using arbitrary mounting techniques
- blockout undercuts on casts
- bead and box impressions

Respondents holding this job are junior personnel, averaging only 3 years time in service. Six of the seven incumbents hold the 3-skill level, are in paygrades E-1 through E-3, and are in their first enlistment.

Some representative modules include the following:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0008	ORTHODONTIC APPLIANCE FABRICATION	18	39	39	60
0002	GENERAL LAB MAINTENANCE	5	13	52	71

The table clearly shows the emphasis of this group on laboratory maintenance and orthodontic fabrication. The module data clearly show the narrowly defined scope of this job, with the members spending more than 50 percent of their job time in only two modules.

**III. FIXED RESTORATION FABRICATOR JOB (STG75, N=25).** This job constitutes 6 percent of the total sample. Incumbents with this job spend most of their time performing tasks dealing directly with fabricating fixed restorations. This includes waxing, weighing, and investing patterns for fixed restorations, and cutting back wax patterns for resin-veneer substructures. In addition, incumbents also report performing tasks directly related to the everyday lab activities such as disinfecting appliances and articulating using arbitrary mounting techniques. This is a very limited job as incumbents perform an average of only 22 tasks. What distinguishes this job from the Base Dental Lab cluster is the emphasis on tasks dealing specifically with fabricating fixed restorations. The following are typical tasks members with the job perform:

- wax patterns for fixed restorations
- wax metal-ceramic substructure patterns to full contour
- prior to cutback
- fabricate fixed restorations using microscopes
- weigh wax patterns prior to investing
- invest wax patterns
- cutback wax patterns for porcelain or resin-veneer substructures
- sprue wax patterns for fixed restorations
- articulate using arbitrary mounting techniques
- fabricate surveyed crowns
- attend continuing education sessions or courses

Respondents holding this job are relatively inexperienced personnel, averaging less than 6 years time in service and being primarily in paygrades E-5 and below. Fifty-two percent of the respondents hold the 5-skill level, while 44 percent hold the 5-skill level.

Representative modules for the Fixed Restoration Fabricator job include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0003	FIXED RESTORATION FABRICATION	21	63	63	47
0007	WAX PATTERN DUTIES	5	5	68	38
0002	GENERAL LAB MAINTENANCE	5	5	72	25

This table shows that respondents within this job report that they spend 68 percent of their job time performing tasks related to waxing patterns and fixed restoration duties. In addition to their primary duties, members of this job also spend time performing the necessary lab maintenance tasks related to the job.

IV. CROWN FABRICATOR JOB (STG33, N=11). Members in this job represent 3 percent of the survey sample and are responsible for fabricating, soldering, finishing, and polishing crowns and all-metal fixed restorations. They spend 67 percent of their duty time performing the fabrication functions, which includes such things as seating castings, finishing substructures for porcelain applications, casting conventional gold alloys, recovering castings, and investing and burning out wax patterns. This is also a limited job, as members perform an average of only 29 tasks. Representative tasks for this job include:

- seat castings
- finish and polish fixed restorations
- finish substructures for porcelain applications
- assemble fixed partial denture components in matrices for
- soldering
- fabricate fixed restorations using microscopes
- solder all-metal fixed restorations
- presolder metal-ceramic substructures
- recover precious metal grindings or scraps
- cast conventional gold alloys
- cast metal-ceramic alloys

Respondents holding this job are junior personnel, averaging 6 years time in service. Sixty-three percent are in their first enlistment, and the predominant paygrades are E-1 through E-5. Seventy-three percent hold the 3-skill level, while 27 percent hold the 5-skill level.

The following are representative TMs members perform:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0003	FIXED RESTORATION FABRICATION	21	53	53	58
0004	FIXED RESTORATION SOLDERING	5	13	66	65

The modules listed clearly illustrate the emphasis of this job on fixed restoration duties, with over 60 percent of the personnel's job time contained in these two TMs. The module level data clearly display the narrowly defined scope of this job.

V. AREA DENTAL LABORATORY (ADL) CERAMIC PROSTHESES FABRICATOR JOB (STG44, N=13). This job constitutes 3 percent of the total sample. Incumbents perform an average of 44 tasks, indicating that this job is also somewhat limited in focus. Respondents spend the majority of their duty time fabricating ceramic and metal-ceramic restorations, which includes such tasks as firing porcelains and over-glaze to ceramic restorations, glazing and color correcting ceramic restorations, and oxidizing substructures. In addition to this, incumbents perform tasks such as participating in conferences, assemble tents and don and doff chemical warfare equipment, and perform user maintenance on lab equipment. The following are typical tasks the members of this job perform:

- contour fired porcelains
- apply and fire over-glaze to ceramic restorations
- fire porcelain
- apply opaque porcelains
- fabricate crowns with porcelain labial margins
- surface stain and color correct ceramic restorations
- glaze ceramic restorations mechanically
- oxidize substructures
- apply dentine and enamel porcelains
- apply intrinsic stains
- etch porcelain laminate veneers
- strip porcelain from metal substructures

Respondents in this job average 7 years time in service. Eight hold the 5-skill level, while four hold the 3-skill level, and four are in their first enlistment. One respondent is in paygrade E-6, while the others are in paygrades E-1 to E-5.

Some representative modules include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0006	CERAMIC AND PORCELAIN DUTIES	14	48	48	94
0022	CERAMIC FABRICATION	5	9	57	74
0011	MEDICAL READINESS ACTIVITIES	10	6	63	38
0002	GENERAL LAB MAINTENANCE	5	3	66	31

As can be noted in the table, 57 percent of the members' job time is spent performing tasks within TMs 6 and 22. Supervisors and training personnel should consider the 19 tasks contained in these modules when placing personnel into this job.

**VI. REMOVABLE PARTIAL DENTURE (RPD) FABRICATOR JOB (STG17, N=19).** This job is performed by 5 percent of the sample who spend 46 percent of their duty time fabricating RPD frameworks, 16 percent performing general lab activities, and 11 percent performing medical readiness activities. Incumbents of this limited job perform an average of 36 tasks. Their responsibilities include working with wrought-wire clasps, investing wax patterns for RPDs, finishing and polishing RPD frameworks, and seating finished RPD frameworks on duplicate master casts. Members with this job are distinguished by the time they spend on the following tasks:

- wax and adapt components of RPD framework patterns on refractory casts
- blockout and relieve RPD master casts
- finish and polish RPD frameworks
- seat finished RPD frameworks on duplicate master casts
- blockout undercuts on casts
- prepare RAPs for RPD frameworks
- load or unload patients on patient transportation vehicles
- solder wrought-wire clasps to RPD frameworks
- bend RPD wrought-wire clasps

Respondents in this job average 7 years time in service. Sixty-three percent hold the 5-skill level, while 26 percent hold the 3-skill level, and 36 percent are in their first enlistment. Fifteen percent are in paygrade E-6, while the rest are in paygrades E-1 to E-5.

Representative modules for the RPD Fabricator job include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0031	REMOVABLE PARTIAL DENTURE FABRICATION	13	38	38	62
0002	GENERAL LAB MAINTENANCE	5	6	44	35
0001	DENTAL LAB DOCUMENTATION	7	7	51	29

The specialization in RPD duties becomes apparent when referencing the module table. Members with this job spend half of their time on TMs related to RPD fabrication and related lab duties, and documentation.

VII. SUPPLY JOB (STG47, N=7). This job is performed by 2 percent of the survey sample. Incumbents perform an average of 65 tasks in this somewhat broad job. They report spending 44 percent of their duty time performing supply activities, 11 percent training, and 9 percent of their time on organizing and planning functions. Members in this job are responsible for maintaining supply levels, ordering and issuing supplies, maintaining cost-center management folders, and researching supply catalogs. Typical tasks performed by members with the job include:

- maintain supply levels
- prepare requests for local purchase items
- research supply catalogs
- establish supply levels
- verify supplies received against invoices
- order medical supplies using shopping guides
- issue supplies
- inventory organizational equipment or supplies
- maintain custodian action lists
- maintain back-order reports
- maintain civilian or federal supply catalogs
- order nonmedical supplies
- maintain AF medical materiel letter (AFMML) files

Respondents performing this job are the second most experienced group within the study, averaging 9 years time in service. One member holds the 7-skill level, four hold the 5-skill level, and two hold the 3-skill level. Six of the incumbents are distributed equally among the E-4 and E-5 paygrades, while one is in the paygrade E-7.

Representative modules include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0018	SUPPLY ACTIVITIES	13	32	32	98
0020	FINANCIAL DOCUMENTATION	4	7	39	89
0019	FINANCIAL MANAGEMENT	4	7	46	68
0001	DENTAL LAB DOCUMENTATION	7	5	51	37

This table clearly illustrates the emphasis of this job on supply activities, with incumbents spending 32 percent of their total job time in TM 18. The table also emphasizes the other areas where members are spending their duty time, such as financial documentation and management, and dental lab documentation.

**VIII. DENTAL LAB NCOIC AND SUPERINTENDENT JOB (STG35, N=21).**  
Incumbents in this job represent 5 percent of the total sample. They spend 66 percent of their job time in supervisory and training functions. Incumbents perform an average of 86 tasks in this broad job. Members are responsible for managing the day-to-day activities of various dental labs. Included in this responsibility are improving work methods or procedures, counseling personnel, conducting performance feedback sessions, evaluating quality control procedures, and writing EPRs. In addition to these managerial duties, incumbents also perform such technical tasks as filing DD forms 2322 (Dental Laboratory Work Authorization), and recording CLV codes on DD Forms 2322. Members with this job are distinguished by the time they spend performing the following tasks:

- conduct performance feedback worksheet (PFW) evaluation sessions
- interpret policies, directives, or procedures for subordinates
- counsel personnel on personal or military-related matters
- schedule personnel for leaves, passes, or temporary duty (TDY)
- improve work methods or procedures
- evaluate quality control procedures
- plan or schedule work assignments or priorities
- write EPRs

Respondents performing this job are the most experienced group within the study, averaging over 16 years time in service. There were no incumbents in their first enlistment, and the predominate paygrades are E-5 through E-9. Fifty-seven percent of the respondents hold the 7-skill level, while 29 percent hold the 9-/CEM-skill level.



Some representative modules for this job include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0013	WORKCENTER MANAGEMENT	14	21	21	83
0014	QUALITY ASSURANCE ACTIVITIES	18	17	38	71
0001	DENTAL LAB DOCUMENTATION	7	8	46	70
0015	SUPERVISION DUTIES	7	7	53	62

The Module Table displays the modules one would expect to see from a job of this nature, with the workcenter management module consuming 21 percent of the duty time of the incumbents of this job. In addition, other necessary elements are also displayed, such as the quality assurance, documentation, and supervision modules.

#### Comparison of Current Group Descriptions to Previous Study

The results of the specialty job analysis were compared to the previous OSR, dated August 1988. Table 6 lists the major jobs identified in the 1994 report and their equivalent jobs from the 1988 OSR. A review of the jobs performed by the current sample indicates that six of the eight 1994 jobs were matched to similar jobs identified in the 1988 report. The two jobs not matched include Fixed Restoration Fabricator job and the Supply job.

The Dental Laboratory career ladder is characterized by a fairly homogeneous job structure. One cluster, the Base Dental Lab cluster, comprises the bulk of the specialty (68 percent). The remainder are distributed across specialized fabrication jobs and supporting supply and management jobs.

### **ANALYSIS OF DAFSC GROUPS**

An analysis of DAFSC groups, in conjunction with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed at the various skill levels. This information may be used to evaluate how well career ladder documents, such as AFMAN 36-2108 Specialty Descriptions and the STS, reflect what career ladder personnel are actually doing in the field.

The distribution of skill-level groups across the career ladder jobs for respondents is displayed in Table 7, while Table 8 offers another perspective by displaying percent time spent on each duty across the skill-level groups.

**TABLE 6****SPECIALTY JOB COMPARISONS BETWEEN CURRENT AND 1988 SURVEYS**

<b>CURRENT SURVEY</b>	<b>1988 SURVEY</b>
<b>BASE DENTAL LABORATORY CLUSTER</b>	<b>BASE DENTAL LAB AND PROSTHODONTIC SERVICE CENTER PERSONNEL CLUSTER</b>
- CROWN AND FPD FABRICATORS JOB	
- DENTURE FABRICATORS JOB	
<b>ORTHODONTIC FABRICATOR JOB</b>	<b>ORTHODONTIC APPLIANCE FABRICATORS IJT</b>
<b>FIXED RESTORATION FABRICATOR JOB</b>	-
<b>CROWN FABRICATOR JOB</b>	<b>AREA DENTAL LAB CROWN AND BRIDGE FABRICATION PERSONNEL CLUSTER</b>
<b>AREA DENTAL LABORATORY (ADL) CERAMIC PROSTHESES FABRICATOR JOB</b>	<b>AREA DENTAL LAB CERAMIC FABRICATOR IJT</b>
<b>REMOVABLE PARTIAL DENTURE (RPD) FABRICATOR JOB</b>	<b>REMOVABLE PARTIAL DENTURE PERSONNEL CLUSTER</b>
<b>SUPPLY JOB</b>	-
<b>DENTAL LABORATORY NCOIC AND SUPERINTENDENT JOB</b>	<b>DENTAL LAB NCOIC IJT</b>
-	<b>TECHNICAL SCHOOL INSTRUCTORS IJT</b>

- Indicates no match in report

TABLE 7

DISTRIBUTION OF MEMBERS BY DAFSC ACROSS CAREER LADDER JOBS  
(PERCENT)

JOB	4Y131 (N=116)	4Y151 (N=208)	4Y171 (N=68)	4Y191/00 (N=7)
BASE DENTAL LABORATORY CLUSTER	59	75	68	0
ORTHODONTIC FABRICATOR JOB	5	0	0	0
FIXED RESTORATION FABRICATOR JOB	10	6	1	0
CROWN FABRICATOR JOB	7	1	0	0
AREA DENTAL LABORATORY (ADL) CERAMIC PROSTHESES FABRICATOR JOB	3	4	1	0
REMOVABLE PARTIAL DENTURE (RPD) FABRICATOR JOB	4	6	3	0
SUPPLY JOB	2	2	1	0
DENTAL LABORATORY NCOIC AND SUPERINTENDENT JOB 0	1	18	86	
NOT GROUPED	10	5	8	14

TABLE 8

TIME SPENT ON DUTIES BY MEMBERS OF DAFSC GROUPS  
(RELATIVE PERCENT OF JOB TIME)

DUTIES	4Y131 (N=116)	4Y151 (N=208)	4Y171 (N=68)
A ORGANIZING AND PLANNING	1	3	8
B DIRECTING AND IMPLEMENTING	1	4	10
C INSPECTING AND EVALUATING	1	4	11
D TRAINING	2	3	6
E PERFORMING ADMINISTRATIVE ACTIVITIES	3	5	8
F PERFORMING SUPPLY ACTIVITIES	2	3	4
G PERFORMING GENERAL LABORATORY ACTIVITIES	31	22	15
H FABRICATING DENTURE BASES	11	10	8
I FABRICATING REMOVABLE PARTIAL DENTURE (RPD) FRAMEWORKS	4	4	2
J FABRICATING FIXED RESTORATIONS	25	23	15
K FABRICATING CERAMIC OR METAL-CERAMIC RESTORATIONS	6	10	7
L FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	2	2	2
M FABRICATING SPECIAL PURPOSE APPLIANCES	4	3	2
N PERFORMING MEDICAL READINESS ACTIVITIES	7	4	2

A typical pattern of progression is noted within the Dental Laboratory career ladder, with personnel at the 3-skill level spending most of their time on technical tasks. More relative time is spent on duties involving supervisory, managerial, and administrative tasks (see Table 9, Duties A, B, C, D, and E) as they move upward to the 5- and 7-skill levels.

### Skill-Level Descriptions

DAFSC 4Y131: The 116 airmen in the 3-skill level group, representing 29 percent of the survey sample, perform an average of 68 tasks. As shown in Table 7, 59 percent of these airmen are in the Base Dental Lab cluster. They spend approximately 56 percent of their time performing general laboratory activities and fabricating fixed restorations, while 17 percent of their time is spent fabricating denture bases and ceramic or metal-ceramic restorations (see Table 8).

Examples of tasks likely to be performed by 3-skill level personnel include: disinfecting lab equipment, investing and spruing wax patterns, constructing and seating casts, and articulating using arbitrary mounting techniques. Other examples of common tasks performed by a majority of these airmen are shown in Table 9.

DAFSC 4Y151: The 208 airmen in the 5-skill level group represent 52 percent of the total survey sample and perform an average of 108 tasks. Table 8 shows that 5-skill level personnel spend 45 percent of their relative job time performing duties which involve fabricating fixed restorations and performing general lab activities. The remaining 55 percent is spent on a broad range of technical and managerial tasks, as shown in Table 10.

Although 5-skill level personnel spend almost half of their job time performing technical duties, it is the percent of job time spent on supervisory functions that distinguishes them from 3-skill level specialists. As is shown in Table 11, 5-skill members perform more supervisory tasks such as counseling personnel, establishing performance standards, writing EPRs, and conducting on-the-job training (OJT).

DAFSC 4Y171: Seven-skill level personnel represent 17 percent of the survey sample and perform an average of 136 tasks. Forty-three percent of their relative job time is spent on tasks in supervisory, managerial, training, and administrative duties (more than twice that of 5-skill level personnel). The remaining 57 percent of their time, as can be seen in Table 12, is dedicated to technical tasks such as filing forms, articulating using arbitrary techniques, investing wax patterns, seating and recovering castings, casting conventional gold alloys, and waxing patterns for fixed restorations.

Tasks which best distinguish 7-skill level personnel from their junior counterparts are presented in Table 13. As expected, the key difference is higher percentage of members performing supervisory functions, such as counseling and evaluating personnel, writing recommendations and performance feedback worksheets, and establishing lab standards and procedures.

TABLE 9

## REPRESENTATIVE TASKS PERFORMED BY DAFSC 4Y131 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=116)
G147 Articulate using arbitrary mounting techniques	83
G173 Disinfect lab equipment or work areas	69
G172 Disinfect appliances	66
G196 Weigh and measure dental laboratory materials	63
J284 Invest wax patterns	62
J290 Sprue wax patterns for fixed restorations	59
N388 Load or unload patients on patient transportation vehicles	59
J293 Wax patterns for fixed restorations	59
G152 Blockout undercuts on casts	59
M347 Fabricate athletic mouthguards	58
G168 Construct working casts with removable dies using Pindex-type systems	57
G151 Bead and box impressions	57
G156 Construct custom impression trays for fixed prosthodontics	56
G159 Construct diagnostic casts, other than orthodontic study casts	55
G181 Perform user maintenance on dental laboratory equipment	53
G184 Prepare slurry water	53
G160 Construct master casts for complete dentures	53
J269 Cutback wax patterns for porcelain or resin-veneer substructures	52
J280 Finish and polish fixed restorations	52
J291 Wax metal-ceramic substructure patterns to full contour prior to cutback	51
G161 Construct master casts for RPDs	51
J274 Fabricate fixed restorations using microscopes	50
J288 Seat castings	50
G191 Soak casts in SDS	50
G158 Construct custom impression trays for removable prosthodontics	50
J263 Burnout wax patterns	49
G178 Mark removable appliances with names and social security numbers	48
G89 Repolish prostheses after clinical adjustments	48
N402 Transport litter patients	47
M361 Fabricate hard nightguards	47

TABLE 10

## REPRESENTATIVE TASKS PERFORMED BY DAFSC 4Y151 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=208)
G147 Articulate using arbitrary mounting techniques	83
J284 Invest wax patterns	75
J290 Sprue wax patterns for fixed restorations	74
J293 Wax patterns for fixed restorations	73
J280 Finish and polish fixed restorations	73
G181 Perform user maintenance on dental laboratory equipment	72
G172 Disinfect appliances	71
J291 Wax metal-ceramic substructure patterns to full contour prior to cutback	70
J288 Seat castings	69
J269 Cutback wax patterns for porcelain or resin-veneer substructures	68
G173 Disinfect lab equipment or work areas	67
J286 Recover castings	67
G152 Blockout undercuts on casts	66
E118 Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)	66
G168 Construct working casts with removable dies using Pindex-type systems	66
J263 Burnout wax patterns	65
J287 Recover precious metal grindings or scraps	65
J281 Finish substructures for porcelain applications	64
J265 Cast conventional gold alloys	64
G196 Weigh and measure dental laboratory materials	64
M347 Fabricate athletic mouthguards	64
J259 Apply die spacers	63
G148 Articulate using facebow transfers	63
J266 Cast metal-ceramic alloys	63
J279 Fabricate surveyed crowns	63
G159 Construct diagnostic casts, other than orthodontic study casts	63
G189 Repolish prostheses after clinical adjustments	61
G176 Fabricate diagnostic wax-ups	61
K316 Fire porcelain	60
N388 Load or unload patients on patient transportation vehicles	60

TABLE 11

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 4Y131 AND DAFSC 4Y151 PERSONNEL  
(PERCENT MEMBERS PERFORMING)

TASKS	4Y131 (N=116)	4Y151 (N=208)	DIFFERENCE
C47 Conduct perform. once feedback worksheet (PFW) evaluation sessions	5	45	-40
C69 Write EPRs	5	44	-39
C59 Evaluate quality of finished prostheses	6	45	-39
B27 Counsel personnel on personal or military-related matters	5	39	-34
K298 Apply dentine and enamel porcelains	25	58	-33
K318 Glaze porcelain using autogenous method	17	50	-33
K316 Fire porcelain	28	60	-32
K325 Surface stain and color correct ceramic restorations	22	53	-31
D79 Conduct OJT	7	38	-31
K319 Oxidize substructures	24	54	-30
B43 Supervise Dental Laboratory Specialists (AFSC 98250)	3	33	-30
J276 Fabricate post and cores using indirect pattern technique	26	56	-30
J285 Presolder metal-ceramic substructures	15	44	-29
D83 Counsel trainees on training progress	6	34	-28
C46 Analyze workload requirements	6	34	-28
J287 Recover precious metal grindings or scraps	37	64	-27
K324 Strip porcelain from metal substructures	23	50	-27
K297 Apply and fire over-glaze to ceramic restorations	19	46	-27
J275 Fabricate post and cores using direct pattern technique	25	51	-26
K305 Contour fired porcelains	28	54	-26
C58 Evaluate quality control procedures	6	32	-26
A9 Establish laboratory quality fabrication standards	2	28	-26
K303 Apply opaque porcelains	27	52	-25



TABLE 12

## REPRESENTATIVE TASKS PERFORMED BY DAFSC 4Y171 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=68)
C59 Evaluate quality of finished prostheses	81
B27 Counsel personnel on personal or military-related matters	81
C47 Conduct performance feedback worksheet (PFW) evaluation sessions	78
C69 Write EPRs	76
E104 File or review DD Forms 2322 (Dental Laboratory Work Authorization)	76
E118 Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)	76
C56 Evaluate personnel for compliance with performance standards	75
A13 Participate in conferences, or workshops	75
G147 Articulate using arbitrary mounting techniques	75
A9 Establish laboratory quality fabrication standards	74
B38 Improve work methods or procedures	72
B43 Supervise Dental Laboratory Specialists (AFSC 98250)	72
J284 Invest wax patterns	72
J288 Seat castings	72
G181 Perform user maintenance on dental laboratory equipment	72
G172 Disinfect appliances	71
J290 Sprue wax patterns for fixed restorations	71
C58 Evaluate quality control procedures	69
A16 Plan or schedule work assignments or priorities	69
J291 Wax metal-ceramic substructure patterns to full contour prior to cutback	69
J269 Cutback wax patterns for porcelain or resin-veneer substructures	69
J286 Recover castings	69
J293 Wax patterns for fixed restorations	68
A22 Schedule personnel for leaves, passes, or temporary duty (TDY)	68
B26 Conduct supervisory orientations of newly assigned personnel	68
J280 Finish and polish fixed restorations	68
D75 Attend continuing education sessions or courses	68
J265 Cast conventional gold alloys	68
C46 Analyze workload requirements	66
B39 Interpret policies, directives, or procedures for subordinates	68

TABLE 13

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 4Y151 AND DAFSC 4Y171 PERSONNEL  
(PERCENT MEMBERS PERFORMING)

TASKS	4Y151 (N=208)	4Y171 (N=68)	DIFFERENCE
A22 Schedule personnel for leaves, passes, or temporary duty (TDY)	16	67	-51
C56 Evaluate personnel for compliance with performance standards	28	75	-47
B26 Conduct supervisory orientations of newly assigned personnel	21	67	-46
A9 Establish laboratory quality fabrication standards	28	73	-45
B44 Supervise Dental Laboratory Technicians (AFSC 98270)	6	50	-44
A1 Assign personnel to duty positions	18	60	-42
B27 Counsel personnel on personal or military-related matters	39	80	-41
B39 Interpret policies, directives, or procedures for subordinates	26	66	-40
C71 Write recommendations for awards or decorations	21	60	-39
B32 Implement continuing education programs or procedures	23	61	-38
B37 Implement self-inspection programs or procedures	18	56	-38
A6 Develop management objectives	14	52	-38
F122 Assign personnel to receive supplies or precious metals	14	52	-38
B43 Supervise Dental Laboratory Specialists (AFSC 98250)	33	71	-38
A2 Assign sponsors for newly assigned personnel	9	47	-38
A16 Plan or schedule work assignments or priorities	31	69	-38
A12 Establish work methods, production controls, or inspection procedures	25	63	-38
B34 Implement hazardous chemicals programs or procedures	11	48	-37
C63 Evaluate work schedules	19	56	-37
C58 Evaluate quality control procedures	33	70	-37

### Summary

A typical career ladder progression within the AFSC 4Y1X1 career ladder is evident, with personnel at the 3-skill level spending the vast majority of their job time performing technical tasks. A moderate shift towards supervisory functions occurs at the 5-skill level, with members still spending more than 60 percent of their duty time performing technical functions. Personnel at the 7-skill level perform both technical and supervisory functions, with a relatively higher percentage of their time spent on supervisory duties, as compared to the more junior personnel.

## **ANALYSIS OF AFMAN 36-2108 SPECIALTY DESCRIPTIONS**

Survey data were compared to the AFMAN 36-2108 Specialty Descriptions for Dental Laboratory Apprentices and Journeymen, dated 15 Mar 1991, effective 30 April 1991. The descriptions for the 3-, 5-, and 7-skill levels were generally accurate, depicting the highly technical aspects of the job, as well as the increase in supervisory responsibilities previously described in the DAFSC analysis. The descriptions also capture the primary responsibilities of members identified by the job structure analysis process.

## **TRAINING ANALYSIS**

Occupational survey data are sources of information which can be used to assist in the development of relevant training programs for entry-level personnel. Factors used to evaluate entry-level Dental Laboratory training include jobs being performed by first-enlistment personnel, overall distribution of first-enlistment personnel across career ladder jobs, percent first-job (1-24 months TAFMS) and first-enlistment (1-48 months TAFMS) members performing specific tasks, ratings of how much emphasis tasks should receive in formal training, and ratings of relative TD.

### First-Enlistment Personnel

In this study, there are 108 AFSC 4Y1X1 personnel in their first enlistment (1-48 months TAFMS), representing 27 percent of the survey sample. As displayed in Table 14, approximately 95 percent of their duty time is devoted to performing technical tasks. First-enlistment personnel spend the majority of their job time in three areas: Performing general laboratory activities (32 percent), Fabricating fixed restorations (25 percent), and Fabricating denture bases (12 percent). The vast majority of first-enlistment personnel are involved in day-to-day Dental Laboratory activities. Table 15 shows typical tasks performed by first-enlistment personnel, most of which

TABLE 14

**RELATIVE PERCENT OF TIME SPENT ACROSS DUTIES BY  
FIRST-ENLISTMENT AFSC 4Y1X1 PERSONNEL**

<b>TASKS</b>	<b>PERCENT TIME SPENT</b>
A ORGANIZING AND PLANNING	1
B DIRECTING AND IMPLEMENTING	1
C INSPECTING AND EVALUATING	*
D TRAINING	1
E PERFORMING ADMINISTRATIVE ACTIVITIES	2
F PERFORMING SUPPLY ACTIVITIES	1
G PERFORMING GENERAL LABORATORY ACTIVITIES	32
H FABRICATING DENTURE BASES	12
I FABRICATING REMOVABLE PARTIAL DENTURE (RPD) FRAMEWORKS	5
J FABRICATING FIXED RESTORATIONS	25
K FABRICATING CERAMIC OR METAL-CERAMIC RESTORATIONS	5
L FABRICATING AND REPAIRING ORTHODONTIC APPLIANCES	3
M FABRICATING SPECIAL PURPOSE APPLIANCES	5
N PERFORMING MEDICAL READINESS ACTIVITIES	7

\* Denotes less than 1 percent

TABLE 15

**REPRESENTATIVE TASKS PERFORMED BY  
FIRST-ENLISTMENT PERSONNEL**

<b>TASKS</b>	<b>PERCENT MEMBERS PERFORMING (N=108)</b>
Articulate using arbitrary mounting techniques	81
G173 Disinfect lab equipment or work areas	66
G172 Disinfect appliances	63
G152 Blockout undercuts on casts	63
J284 Invest wax patterns	61
G196 Weigh and measure dental laboratory materials	60
J290 Sprue wax patterns for fixed restorations	58
N388 Load or unload patients on patient transportation vehicles	57
M347 Fabricate athletic mouthguards	57
G151 Bead and box impressions	57
G159 Construct diagnostic casts, other than orthodontic study casts	56
J293 Wax patterns for fixed restorations	55
G156 Construct custom impression trays for fixed prosthodontics	55
G181 Perform user maintenance on dental laboratory equipment	54
G184 Prepare slurry water	54
G158 Construct custom impression trays for removable prosthodontics	53
G160 Construct master casts for complete dentures	53
G168 Construct working casts with removable dies using Pindex-type systems	52
G161 Construct master casts for RPDs	51
M361 Fabricate hard nightguards	50
J291 Wax metal-ceramic substructure patterns to full contour prior to cutback	50
J269 Cutback wax patterns for porcelain or resin-veneer substructures	50
J280 Finish and polish fixed restorations	50
J288 Seat castings	50
H204 Boil out wax from molds	50
G178 Mark removable appliances with names and social security numbers	49
N402 Transport litter patients	48
J263 Burnout wax patterns	48
G166 Construct stone matrices for denture repairs	48
J274 Fabricate fixed restorations using microscopes	47

deal with technical tasks such as disinfecting lab equipment, work areas, and appliances, investing and sprueing wax patterns, articulating using arbitrary mounting techniques, and fabricating mouthguards. Table 16 shows the equipment items utilized by 40 percent or more of the first-job and first-enlistment AFSC 4Y1X1 personnel.

Within the groups identified in the **SPECIALTY JOBS** section of this report, first-enlistment personnel were present in six of the eight jobs. As shown in Figure 3, 60 percent of first-enlistment personnel surveyed are grouped in the BDL cluster.

### TE and TD Data

TE and TD data are secondary task factors that can help training development personnel decide which tasks to emphasize for entry-level training. These ratings, based on the judgments of senior career ladder NCOs at operational units, provide a rank-ordering of those tasks considered important for first-enlistment airman training (TE) and a measure of the relative difficulty of those tasks (TD). When combined with data on the percentages of first-enlistment personnel performing tasks, comparisons can be made to determine if training adjustments are necessary. For example, tasks receiving high ratings on both task factors (TE and TD), accompanied by moderate to high percentages performing, may warrant resident training. Those tasks receiving high task factor ratings, but low percentages performing, may be more appropriately planned for OJT programs within the career ladder. Low task factor ratings may highlight tasks best omitted from training for first-enlistment personnel. These decisions must be weighed against percentages of personnel performing the tasks, command concerns, and criticality of the tasks.

To assist training development personnel, AFOMS developed a computer program that uses these task factors and the percentage of first-enlistment personnel performing tasks to produce Automated Training Indicators (ATI). ATIs correspond to training decisions listed and are defined in the Training Decision Logic Table found in Attachment 1, ATRC 52-22. ATI allows training developers to quickly focus attention on those tasks which are most likely to qualify for ABR course consideration

Tasks having the highest TE ratings are listed in Table 17. Included for each task are the percentage of first-job and first-enlistment personnel performing and the TD rating. As illustrated in Table 17, tasks with the highest TE ratings deal with constructing various casts, waxing and sprueing patterns for fixed restorations, fabricating and flasking RPDs, and fabricating interim RPDs. These tasks are performed by high percentages of first-job, first-enlistment personnel.

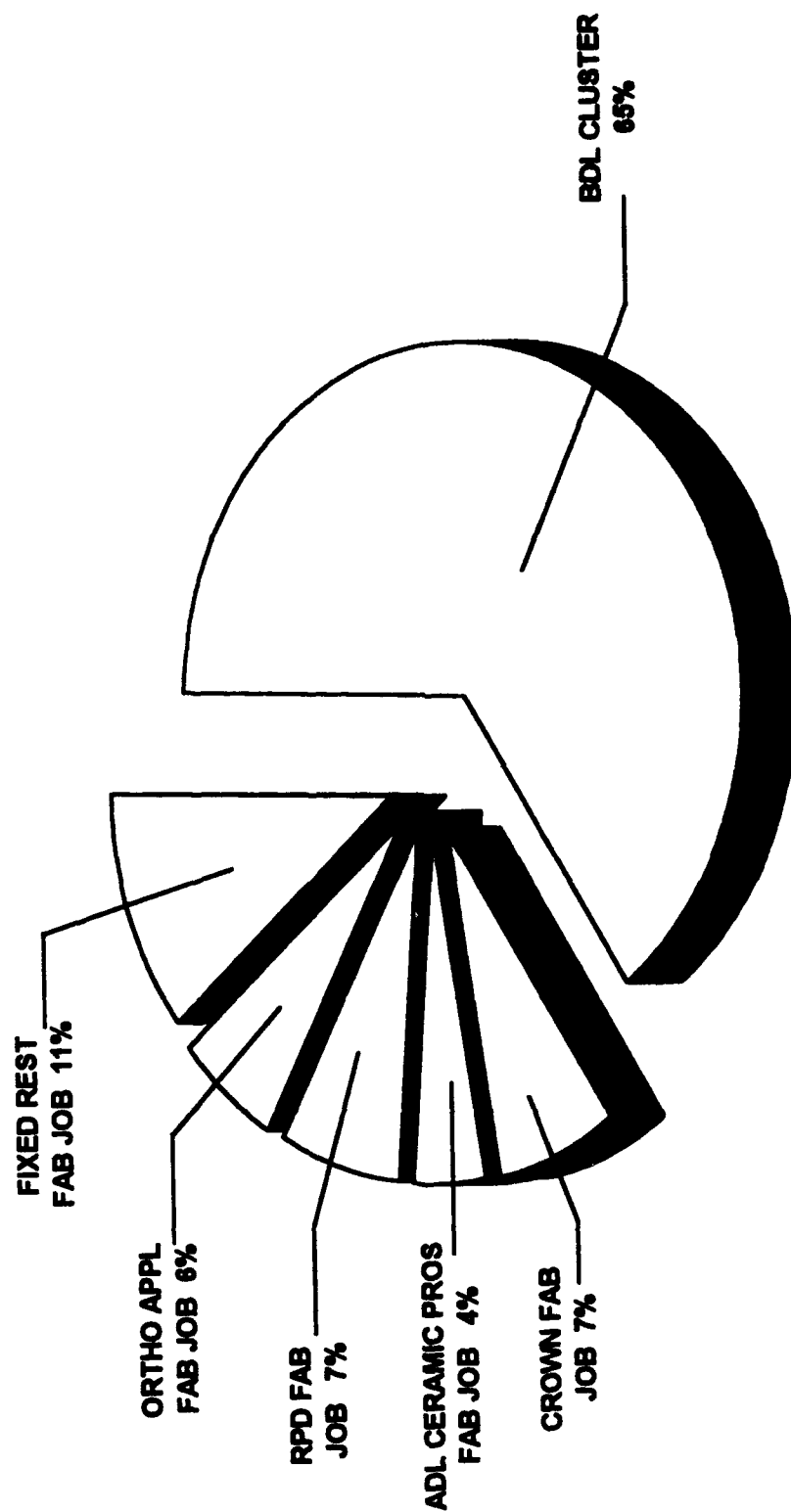
Table 18 lists the tasks having the highest TD ratings. The percentage of first-enlistment, first-job, 5- and 7-skill level personnel performing, and TE ratings is also included for each task. Most tasks with high TD ratings are technical and supervisory functions, are performed by quite low percentages of first-job, first-enlistment, 5- and 7-skill level members, and have low TE ratings. The few technical tasks with high TD ratings also have high TE ratings and are performed by high percentages of survey respondents.

TABLE 16

EQUIPMENT ITEMS USED BY MORE THAN 40 PERCENT OF FIRST-JOB  
OR FIRST-ENLISTMENT PERSONNEL

EQUIPMENT	4Y1X1 1ST JOB (N=39)	4Y1X1 1ST ENL (N=108)
SEMIADJUSTABLE ARTICULATORS	92	92
DENTAL VIBRATORS	90	89
ELECTRIC HANDPIECES	82	87
GENERAL PURPOSE CAST TRIMMERS	82	85
NONADJUSTABLE ARTICULATORS	69	72
VACUUM INVESTORS	69	69
BENCH-MOUNTED DENTAL LATHES	64	72
STEAM CLEANERS	64	72
SUCTION UNITS	62	71
PNEUMATIC CHISELS	62	65
MICROSCOPES	59	70
ULTRASONIC CLEANERS	59	74
MICROBLASTER MACHINES	54	69
PRESSURE POTS	54	60
DENTURE FLASKS	54	56
DENTAL SURVEYORS	51	59
BROKEN ARM TYPE CASTING MACHINES	49	56
ELECTRONIC SCALES	46	57
WATERBATHS	46	56
DOWEL PIN DRILLING MACHINES	46	53
CROWN AND FIXED PARTIAL DENTURE BURNOUT OVENS	44	56
SHELLBLAST MACHINES	44	55
SANDBLAST MACHINES	44	50
GAS BOILOUT TANKS	44	49
HIGH-SPEED DENTAL LATHES	44	49
CASTING TORCHES	41	52
RELINIE JIGS	41	49

# **JOBS PERFORMED BY FIRST-ENLISTMENT AFSC 4Y1X1 PERSONNEL**



**FIGURE 3**



TABLE 17

## SAMPLE OF TASKS WITH HIGHEST TRAINING EMPHASIS RATINGS

TASKS	TNG EMP	PERCENT MEMBERS PERFORMING		TSK DIFF
		1ST JOB	1ST ENL	
G168 Construct working casts with removable dies using Pindex-type systems	7.68	46	53	4.90
G160 Construct master casts for complete dentures	7.63	44	54	4.44
G161 Construct master casts for RPDs	7.55	41	52	4.53
G159 Construct diagnostic casts, other than orthodontic study casts	7.54	49	56	3.49
J293 Wax patterns for fixed restorations	7.46	51	56	5.66
J290 Sprue wax patterns for fixed restorations	7.42	56	58	4.76
J288 Seat castings	7.38	33	50	4.84
J284 Invest wax patterns	7.37	56	61	4.42
J280 Finish and polish fixed restorations	7.35	31	50	4.83
J291 Wax metal-ceramic substructure patterns to full contour prior to cutback	7.28	51	50	5.61
J265 Cast conventional gold alloys	7.28	31	45	4.21
H223 Finish and polish denture bases	7.26	36	43	4.41
H226 Flask RPDs	7.23	33	42	5.66
H216 Fabricate interim RPDs	7.23	38	41	5.08
H225 Flask complete dentures	7.22	23	41	4.53
H220 Fabricate record bases and occlusion rims	7.18	33	41	4.07
H203 Arrange artificial teeth opposing natural dentitions	7.14	33	44	5.12
H227 Pack and cure complete denture molds	7.08	28	44	4.64
H231 Reline complete dentures or RPDs	7.06	23	37	5.05
H202 Arrange artificial teeth for RPDs	7.06	36	46	5.10
G151 Bead and box impressions	7.06	46	57	3.87
H235 Wax-up denture bases for processing	6.98	31	42	4.98
J266 Cast metal-ceramic alloys	6.95	31	37	4.38
G172 Disinfect appliances	6.89	56	63	2.92
G147 Articulate using arbitrary mounting techniques	6.89	87	81	3.55
J286 Recover castings	6.82	38	45	3.30
G188 Replace broken or missing artificial teeth on complete or partial denture bases	6.72	36	46	4.72
G156 Construct custom impression trays for fixed prosthodontics	6.72	51	56	3.68
G173 Disinfect lab equipment or work areas	6.69	59	66	2.96
G166 Construct stone matrices for denture repairs	6.69	41	48	3.49

TE MEAN = 2.97; S.D. = 2.23 (HIGH = 5.20)

TD MEAN = 5.00; S.D. = 1.00

TABLE 18

## SAMPLE OF TASKS WITH HIGHEST TASK DIFFICULTY RATINGS

TASKS	TSK DIFF	PERCENT MEMBERS PERFORMING					TNG EMP
		1ST JOB	1ST ENL	4Y151	4Y171		
L330							
Fabricate Frankel appliances	7.69	0	2	2	3	1.12	
I244							
Fabricate swing-lock RPD frameworks	7.30	0	2	5	4	.88	
M352							
Fabricate cranial implants	7.17	0	0	0	0	.40	
M357							
Fabricate ear, nose, or extremity prostheses	7.13	0	2	1	1	.57	
D85							
Develop career development course (CDC) materials	7.13	0	0	0	3	.18	
M366							
Fabricate obstetrics/gynecology (OB/GYN) stents	7.10	0	0	0	0	.38	
K314							
Fabricate porcelain jacket crowns	6.99	3	3	2	4	1.71	
K315							
Fabricate porcelain laminate veneers	6.84	3	6	14	21	2.80	
D87							
Develop resident course curriculum materials	6.83	0	0	3	6	.14	
M367							
Fabricate ocular prostheses	6.80	0	2	1	1	.48	
K309							
Fabricate Dicor restorations	6.79	0	2	3	0	1.22	
L326							
Fabricate bionators	6.75	0	3	4	1	.92	
I243							
Fabricate RPD frameworks using precision attachments	6.74	3	2	2	3	.92	
K310							
Fabricate Dicor substructures	6.73	0	2	3	0	1.17	
G177							
Fabricate titanium castings	6.73	5	5	3	3	1.06	
M372							
Fabricate plastic surgery silicone implants	6.71	0	0	0	0	.31	
A14							
Plan layouts of facilities	6.62	0	1	9	18	.29	
M360							
Fabricate glossectomy appliances	6.59	0	2	2	0	.48	
M368							
Fabricate palatal lifts	6.57	0	1	1	0	.51	
A10							
Establish organizational policies, operating instructions (OIs), or standing operating procedures (SOPs)	6.52	3	2	15	50	.89	
K305							
Contour fired porcelains	6.51	8	24	55	59	5.75	
M365							
Fabricate nasal stents	6.51	0	0	0	0	.46	
K301							
Apply intrinsic stains	6.51	0	12	38	37	4.31	
C71							
Write recommendations for awards or decorations	6.51	0	1	21	60	.57	
J272							
Fabricate fixed partial dentures for use with dental implants	6.51	0	6	7	9	1.86	
K311							
Fabricate In-Ceram restorations	6.51	3	4	4	1	1.38	
K308							
Fabricate crowns with porcelain labial margins	6.50	5	22	52	54	5.12	
M369							
Fabricate pectus-excavatum implants	6.47	0	0	0	0	.26	
C69							
Write EPRs	6.45	0	2	45	76	1.05	
J273							
Fabricate fixed restorations using attachments	6.45	5	10	33	26	2.54	
M351							
Fabricate cleft palate obturators	6.43	0	3	3	6	1.32	

TD MEAN = 5.00; S.D. = 1.00

TE MEAN = 2.97; S.D. = 2.23 (HIGH = 5.20)

Various lists of tasks, accompanied by TE and TD ratings, are contained in the TRAINING EXTRACT package and should be reviewed in detail by technical school personnel. For a more detailed explanation of TE and TD ratings, see Task Factor Administration in the SURVEY METHODOLOGY section of this report.

### Specialty Training Standard (STS)

Technical school personnel from the Sheppard Training Center matched JI tasks to sections and subsections of the Dental Laboratory Specialty STS and to the ABR4Y131 Plan of Instruction (POI). Listings of the STS and POI were then produced, showing tasks matched, percent members performing the tasks, and TE and TD ratings for each matched task. These listings are included in the Training Extract sent to the school for review. Criteria set forth in AFR 8-13 (dated 1 August 1986), and AETCR 52-22 paragraph 3b(2), were used to review the relevance of each STS element that had inventory tasks matched to it. Any element with matched tasks performed by 20 percent or more first-job, first-enlistment, 5-, or 7-skill level 4Y1X1 members is considered to be supported and should be part of the STS.

### AFSC 4Y1X1 STS

Paragraphs 1 through 5 deal with general topics of security, supervision, training, technical publications, and management. Because paragraphs 1 through 5 deal with general topics, they were not reviewed. Paragraphs 6 through 19 cover the common aspects of the career ladder.

Using standard AETC criteria and percentages of first-job, first enlistment, 5-, and 7-skill level members performing matched tasks, all but 12 entries are supported by survey data. Ten of the twelve unsupported entries were in paragraph 15 - Removable Partial Dentures, and included survey and design diagnostic cast (entry 15a), transfer design to master cast (entry 15b), block out and ledge master casts (entry 15d), relieve master casts (entry 15e), duplicate master casts (entry 15f), wax frameworks (entry 15h), sprue and invest wax-ups (entry 15i), and prepare tube teeth (entry 15p). Another unsupported entry was found in paragraph 6 (entry 6c(3)) and concerns issuing supplies. The final unsupported entry was found in paragraph 17 (entry 17b(1)) and deals with fabricating porcelain jacket crowns. Examples of the unsupported entries, with accompanying survey data, are listed in Table 19.

One STS entry, paragraph 13e, deals with performing altered cast techniques for removable partial dentures. This entry is matched to tasks performed by very high percentages of criterion group members and has high TE and TD ratings, but has a dash (-) training code, meaning students in the entry-level course are not taught how to perform this task. Because these functions are not taught in the entry-level course, but are performed by high percentages of personnel, training personnel need to ensure they are adequately covered by the OJT curriculum and may consider adding these tasks into the entry-level course.

TABLE 19

EXAMPLES OF STS ITEMS NOT SUPPORTED BY OSR DATA

STS REFERENCE/TASKS	3-LVL COURSE PROF CODE	TNG EMP	PERCENT MEMBERS PERFORMING				TSK DIFF
			1ST ENL (N=108)	5-SKILL LEVEL (N=208)	7-SKILL LEVEL (N=68)		
0133 15a. Survey and design diagnostic cast	a						
1255 Survey and design casts for RPD frameworks		1.35	4	6	4	6.28	
0134 15b. Transfer design to master casts	1a						
1256 Transfer design from RPD diagnostic to master casts		1.91	6	5	6	5.08	
0137 15c. Relieve master casts	1a						
1237 Blockout and relieve RPD master casts		3.48	17	13	12	4.74	
0138 15f. Duplicate master casts	1a						
1239 Duplicate RPD master casts to produce refractory or duplicate master casts		2.74	8	6	9	4.70	
0140 15h. Wax frameworks	1a						
1257 Wax and adapt components of RPD framework patterns on refractory casts		2.35	7	8	9	5.29	
0189 17b(1). Porcelain jacket crowns	-						
K314 Fabricate porcelain jacket crowns		1.71	3	2	4	6.99	

TD MEAN = 5.00; S.D. = 1.00

TE MEAN = 2.97; S.D. = 2.23 (HIGH = 5.20)

There are a few technical tasks performed by more than 20 percent of all respondents that are not matched to STS elements (see Table 20). These tasks deal with waxing patterns for fixed restorations; disinfecting appliances, work areas and lab materials; attaching wrought-wire clasps to RPDs with acrylic; and replacing artificial teeth on denture bases. Training personnel and SMEs should consider these and other unreferenced tasks to assure proper training is available.

### Plan of Instruction (POI)

JI tasks were matched to related learning objectives in POI J3ABR4Y131-004, dated 21 June 1993, with assistance from technical school SMEs. The method employed was similar to that of the STS analysis. The data examined included percent members performing data for first-enlistment (1-48 months TAFMS) personnel, and TE and TD ratings. ATIs for each task were also used.

POI blocks, units of instruction, and learning objectives were compared to the standards set forth in Attachment 1, ATCR 52-22, dated 17 February 1989 (30 percent or more of the criterion first-job or first-enlistment group members performing tasks, along with sufficiently high TE and TD ratings on those tasks). By this guidance, learning objectives in the course, which do not meet these criteria, should be considered for elimination from the formal course, if not justified on some other acceptable basis.

Review of the tasks matched to the POI reveals that of the 55 matched learning objectives, 7 were not supported by OSR data. Two of the seven unsupported learning objectives are contained in block 3 - Removable Partial Denture Prosthodontics, and are focused on transferring RPD designs from diagnostic casts to master casts, and waxing-up RPD frameworks. These were also unsupported STS entries. Four other unsupported learning objectives were found in block 4 - Dental Metals and Alloys. The first two were focused on recording expenditures of precious metals and alloys, and dental laboratory supply. The last two unsupported learning objectives in block 4 concerned performing basic cardiac life support. These objectives, while not performed on a regular basis, are considered critical for students who will work in a medical environment. The last unsupported learning objective was found in block 5 - Dental Porcelains. A sample of these objectives is in Table 21, along with the accompanying JI task and survey data.

Many technical tasks performed by over 30 percent of first-enlistment personnel were not matched to the POI. These tasks included surveying casts for undercuts, fabricating fixed restorations using microscopes, mixing disinfectant solutions, and fabricating bleaching stents and fluoride carriers. A more complete list of these tasks, with survey data, is listed in Table 22. In addition to many members performing these functions, several of these tasks are rated high in TE and TD. Training personnel and SMEs should review these and other unreferenced tasks to determine if training should be provided in the formal course.

TABLE 20

EXAMPLES OF TECHNICAL TASKS WITH HIGH TE PERFORMED BY 20 PERCENT  
OR MORE AFSC 4Y1X1 GROUP MEMBERS AND NOT REFERENCED TO THE STS

TASKS	PERCENT MEMBERS PERFORMING					TASK DIFF
	IST	IST	DAFSC	DAFSC	TNG	
	JOB	ENL	4Y151	4Y171	EMP	
	(N=39)	(N=108)	(N=208)	(N=68)		
J293	51	56	73	68	7.46	5.66
G159	49	56	63	51	7.54	3.49
G172	56	63	71	71	6.89	2.92
G173	59	66	67	63	6.69	2.96
G196	54	60	64	59	5.86	2.63
G143	26	35	49	53	6.03	4.83
G150	23	34	41	47	5.60	4.93
G186	33	45	50	54	6.66	4.52
G188	36	46	55	56	6.72	4.72

TE MEAN = 2.97; S.D. = 2.23 (HIGH = 5.20)

TD MEAN = 5.00; S.D. = 1.00

TABLE 21

## EXAMPLES OF POI OBJECTIVES NOT SUPPORTED BY OSR DATA

POI OBJECTIVES/TASKS	TNG EMP	PERCENT MEMBERS PERFORMING				TSK DIFF
		1ST JOB (N=39)	1ST		ATI	
			ENL (N=108)			
0067 III 3a. Given RPD case #6, and required equipment and materials, transfer the RPD designs from diagnostic casts to the master casts IAW Progress Checklist J3ABR98230 004-03-03a. Meas: PC/W						
1256 Transfer design from RPD diagnostic to master casts	1.91	0	6	2	5.08	
0074 III 6a. With the refractory casts, and required equipment and materials, wax-up RPD frameworks IAW Progress Checklist J3ABR98230 004-03-06a. Meas: PC/W						
1257 Wax and adapt components of RPD framework patterns on refractory casts	2.35	5	7	2	5.29	
0076 III 7a. With required equipment and materials, sprue, invest, burnout, and cast the frameworks IAW Progress Checklist J3ABR98230 004-03-07a. Meas: PC/W						
1238 Burnout and cast RPD investment molds	2.42	3	8	2	4.46	
1246 Invest wax patterns for RPDs	2.48	3	6	2	4.86	
0078 III 8a. With required equipment and materials, recover, finish, and polish the frameworks IAW Progress Checklist J3ABR98230 004-03-08a. Meas: PC/W						
1245 Finish and polish RPD frameworks	3.66	5	11	7	5.41	
1251 Seat finished RPD frameworks on duplicate master casts	2.86	5	8	2	5.38	
0093 IV 4b. Given SW J3ABR98230 004-04-04b, Dental Metals and Alloys, record your expenditures of precious metals and alloys with 70% accuracy. Meas: PC/W						
E104 File or review DD Forms 2322 (Dental Laboratory Work Authorization)	3.60	8	18	7	4.20	
E110 Maintain dental registers of precious metals and alloys	4.66	5	14	7	4.81	
E105 Lock up precious metals and alloys	4.48	10	19	3	3.15	

TE MEAN = 2.97; S.D. = 2.23 (HIGH = 5.20)

TD MEAN = 5.00; S.D. = 1.00

TABLE 22

EXAMPLES OF TECHNICAL TASKS PERFORMED BY 30 PERCENT OR MORE  
AFSC 4Y1X1 GROUP MEMBERS AND NOT REFERENCED TO THE POI

TASKS	TNG EMP	1ST JOB (N=39)	1ST ENL (N=108)	TSK ATI	DIFF
G161 Construct master casts for RPDs	7.55	41	52	18	4.53
N388 Load or unload patients on patient transportation vehicles	4.22	38	57	17	4.18
D75 Attend continuing education sessions or courses	3.37	46	40	15	4.39
G165 Construct orthodontic study casts	4.83	33	39	15	5.19
G193 Survey casts for undercuts	4.80	33	43	15	4.81
M378 Fabricate surgical stents	4.45	38	37	15	4.13
G144 Add artificial teeth to existing removable partial dentures (RPDs) bases	6.38	36	44	12	4.85
G188 Replace broken or missing artificial teeth on complete or partial denture bases	6.72	36	46	12	4.72
J274 Fabricate fixed restorations using microscopes straight-pin techniques	5.77	46	47	12	5.14
G166 Construct stone matrices for denture repairs	6.69	41	48	10	3.49
G167 Construct working casts for orthodontic appliances	6.20	41	46	10	3.79
J287 Recover precious metal grindings or scraps	5.66	31	38	10	2.81
G184 Prepare slurry water	5.09	36	55	8	2.30
G162 Construct matrices made of impression materials, such as Reprosil or Express, for denture repairs	5.08	33	40	5	3.85
G179 Mix disinfectant solutions	5.14	38	43	5	2.78
G183 Prepare saturated calcium sulphate dihydrate solutions (SDSs)	4.66	44	40	5	2.37
G190 Repour final impressions for duplicate working casts	5.03	31	38	5	3.41
G195 Unpack cases received from other bases	3.92	33	38	5	2.14
M348 Fabricate bleaching stents	4.42	36	36	5	3.10
M359 Fabricate fluoride carriers	4.06	33	32	5	3.58
N402 Transport litter patients	3.82	31	48	5	3.97

TE MEAN = 2.97; S.D. = 2.23 (HIGH = 5.20)

TD MEAN = 5.00; S.D. = 1.00



## JOB SATISFACTION ANALYSIS

An examination of job satisfaction indicators can give managers a better understanding of factors that may affect the job performance of career ladder airmen. Therefore, the survey booklet included questions about job interest, perceived utilization of talents and training, sense of accomplishment from work, and reenlistment intentions. The responses of the current survey sample were then analyzed by making several comparisons: (1) among TAFMS groups of the AFSC 4Y1X1 career ladder and a comparative sample of personnel from other recently surveyed Medical career fields, (2) between current and previous survey TAFMS groups, and (3) across the cluster and jobs identified in the **SPECIALTY JOBS** section of this report.

Table 23 compares first-enlistment (1-48 months TAFMS), second-enlistment (49-96 months TAFMS), and career (97+ months TAFMS) group data to corresponding enlistment groups from other Medical AFSCs surveyed during the previous calendar year. These data give a relative measure of how the job satisfaction of AFSC 4Y1X1 personnel compares with similar Air Force specialties. Dental Laboratory personnel reported generally higher job satisfaction than members of the comparative sample. However, the career group rated their reenlistment intention lower than that of the comparative sample career group. Overall, satisfaction for all three TAFMS groups is relatively high. The percentages of positive responses in these comparisons reflect a career ladder where personnel appear to be quite satisfied with their jobs.

An indication of changes in job satisfaction perceptions within the career ladder is provided in Table 24, which presents TAFMS group data for 1994 survey respondents and data from respondents to the last OSR of the career ladder in 1988 (AFSC 982X0). Generally, perceptions of job satisfaction have remained constant for all TAFMS groups when compared to the AFSC 982X0 sample. Second-enlistment personnel increase in perceived use of training and talents, while career group personnel show an increase for plans of retirement. Overall, job satisfaction has remained stable within the career ladder.

Table 25 presents job satisfaction data for incumbents with the major jobs identified in the career ladder structure for AFSC 4Y1X1. An examination of these data may reveal indications of concern to functional managers. Job satisfaction indicators for the specialty job groups suggest that members of the Orthopedic Appliance Fabricator job, ADL Ceramic Prostheses Fabricator job, and the BDL cluster are most satisfied. Members expressing the least amount of satisfaction were found in the Supply job, RPD Fabricator job, and the Crown Fabricator job. These three groups constitute less than 10 percent of the total survey sample, and personnel performing the Supply job are essentially working out of the specialty. Job satisfaction indicators suggest that there are no major problems with the satisfaction of this career field.

TABLE 23

COMPARISON OF JOB SATISFACTION INDICATORS FOR TAFMS  
GROUPS IN CURRENT SURVEY TO A COMPARATIVE SAMPLE  
(PERCENT MEMBERS RESPONDING)

	1-48 MONTHS TAFMS		49-96 MONTHS TAFMS		97+ MONTHS TAFMS	
	4Y1X1 (N=108)	COMP SAMPLE (N=341)	4Y1X1 (N=97)	COMP SAMPLE (N=231)	4Y1X1 (N=194)	COMP SAMPLE (N=387)
<u>EXPRESSED JOB INTEREST</u>						
INTERESTING	81	79	86	81	88	82
SO-SO	10	12	8	14	7	11
DULL	9	9	6	5	5	7
<u>PERCEIVED USE OF TALENTS</u>						
FAIRLY WELL TO PERFECT	92	83	93	83	93	86
NONE TO VERY LITTLE	8	17	7	17	7	14
<u>PERCEIVED USE OF TRAINING</u>						
FAIRLY WELL TO PERFECT	94	89	95	90	95	89
NONE TO VERY LITTLE	6	11	5	10	5	11
<u>SENSE OF ACCOMPLISHMENT FROM JOB</u>						
SATISFIED	84	72	88	72	84	73
NEUTRAL	10	9	1	12	6	9
DISSATISFIED	6	19	11	16	10	18
<u>REENLISTMENT INTENTIONS</u>						
YES OR PROBABLY YES	67	53	68	67	72	78
NO OR PROBABLY NO	33	47	32	32	12	8
WILL RETIRE	0	0	0	1	16	14

Comparative data are from AFSCs 4J0X2 (Physical Therapy) and 4P0X1 (Pharmacy) surveyed in 1993

TABLE 24

COMPARISON OF JOB SATISFACTION INDICATORS FOR  
TAFMS GROUPS IN CURRENT SURVEY TO PREVIOUS SURVEY  
(PERCENT MEMBERS RESPONDING)

	1-48 MONTHS		49-96 MONTHS		97+ MONTHS	
	TAFMS		TAFMS		TAFMS	
	1994 (N=108)	1988 (N=225)	1994 (N=97)	1988 (N=107)	1994 (N=194)	1988 (N=137)
<u>EXPRESSED JOB INTEREST</u>						
INTERESTING	81	84	86	85	88	89
SO-SO	10	10	8	5	7	10
DULL	9	6	6	10	5	1
<u>PERCEIVED USE OF TALENTS</u>						
FAIRLY WELL TO PERFECT	92	90	93	88	93	89
NONE TO VERY LITTLE	8	10	7	12	7	11
<u>PERCEIVED USE OF TRAINING</u>						
FAIRLY WELL TO PERFECT	94	94	95	90	95	88
NONE TO VERY LITTLE	6	6	5	10	5	12
<u>SENSE OF ACCOMPLISHMENT FROM JOB</u>						
SATISFIED	84	87	88	80	84	79
NEUTRAL	10	10	1	10	6	12
DISSATISFIED	6	3	11	10	10	9
<u>REENLISTMENT INTENTIONS</u>						
YES OR PROBABLY YES	67	68	68	79	72	77
NO OR PROBABLY NO	33	30	32	11	12	15
WILL RETIRE	0	2	0	10	16	8

TABLE 25

JOB SATISFACTION INDICATORS FOR JOBS  
(PERCENT MEMBERS RESPONDING)

	BASE DENTAL LAB (BDL) CLUSTER (STG26)	ORTHO APPLIANCE FABRICATOR JOB (STG40)	FIXED RESTOR FABRICATOR JOB (STG75)	CROWN FABRICATOR JOB (STG33)
<u>EXPRESSED JOB INTEREST</u>				
INTERESTING	90	100	80	84
SO-SO	5	0	12	18
DULL	5	0	8	18
<u>PERCEIVED USE OF TALENTS</u>				
FAIRLY WELL TO PERFECT	95	100	84	91
NONE TO VERY LITTLE	5	0	16	9
<u>PERCEIVED USE OF TRAINING</u>				
FAIRLY WELL TO PERFECT	97	100	96	91
NONE TO VERY LITTLE	3	0	4	9
<u>SENSE OF ACCOMPLISHMENT FROM JOB</u>				
SATISFIED	91	86	72	73
NEUTRAL	4	14	16	9
DISSATISFIED	5	0	12	18
<u>REENLISTMENT INTENTIONS</u>				
YES OR PROBABLY YES	72	71	64	73
NO OR PROBABLY NO	20	29	36	27
WILL RETIRE	8	0	0	0

TABLE 25 (CONTINUED)

JOB SATISFACTION INDICATORS FOR JOBS  
(PERCENT MEMBERS RESPONDING)

	ADL CERAMIC PROSTHESES FABRICATOR JOB (STG44)	RPD FABRICATOR JOB (STG17)	SUPPLY JOB (STG47)	DENTAL LAB NCOIC & SUPERINTENDENT JOB (STG35)
<u>EXPRESSED JOB INTEREST</u>				
INTERESTING	92	74	71	76
SO-SO	8	10	14	19
DULL	0	16	15	5
<u>PERCEIVED USE OF TALENTS</u>				
FAIRLY WELL TO PERFECT	100	84	86	95
NONE TO VERY LITTLE	0	16	14	5
<u>PERCEIVED USE OF TRAINING</u>				
FAIRLY WELL TO PERFECT	100	89	71	95
NONE TO VERY LITTLE	0	11	29	5
<u>SENSE OF ACCOMPLISHMENT FROM JOB</u>				
SATISFIED	85	74	57	76
NEUTRAL	8	16	14	5
DISSATISFIED	7	10	29	19
<u>REENLISTMENT INTENTIONS:</u>				
YES OR PROBABLY YES	77	68	43	57
NO OR PROBABLY NO	23	26	43	19
WILL RETIRE	0	6	14	24

## **IMPLICATIONS**

As explained in the **INTRODUCTION**, this survey was conducted primarily to provide training personnel with current information on the Dental Laboratory career ladder for use in reviewing current training programs and training documents. The data compiled from this survey support the current structure of the AFSC 4Y1X1 career ladder. The present classification structure, as described by the AFMAN 36-2108 Specialty Descriptions, accurately portrays the jobs in this study.

Analysis of career ladder documents indicates both the STS and POI contain a few unsupported line items and learning objectives. A few of the unsupported areas in both documents are directly related (CRPD frameworks) and should be reviewed to determine if their inclusion in future revisions of these documents is warranted.

No serious job satisfaction problems appear to exist within this specialty. Overall, job satisfaction responses were almost all higher than those of a comparative sample of similar Air Force personnel surveyed in 1992.

**APPENDIX A**

**REPRESENTATIVE TASKS PERFORMED BY  
MEMBERS OF CAREER LADDER JOBS**

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**TABLE A1**  
**BASE DENTAL LAB CLUSTER**  
**(STG26)**

<b>TASKS</b>	<b>PERCENT PERFORMING</b>
G147 Articulate using arbitrary mounting techniques	95
G172 Disinfect appliances	90
M347 Fabricate athletic mouthguards	84
J284 Invest wax patterns	84
G168 Construct working casts with removable dies using Pindex-type systems	83
J290 Sprue wax patterns for fixed restorations	83
J288 Seat castings	81
J280 Finish and polish fixed restorations	81
J286 Recover castings	81
J293 Wax patterns for fixed restorations	80
J265 Cast conventional gold alloys	80
J263 Burnout wax patterns	80
G181 Perform user maintenance on dental laboratory equipment	80
G159 Construct diagnostic casts, other than orthodontic study casts	80
G173 Disinfect lab equipment or work areas	79
G160 Construct master casts for complete dentures	79
G156 Construct custom impression trays for fixed prosthodontics	78
G189 Repolish prostheses after clinical adjustments	78
G148 Articulate using facebow transfers	78
G196 Weigh and measure dental laboratory materials	78
G161 Construct master casts for RPDs	78
G152 Blockout undercuts on casts	77
E118 Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)	76
J287 Recover precious metal grindings or scraps	76
G151 Bead and box impressions	76
J291 Wax metal-ceramic substructure patterns to full contour prior to cutback	75
G166 Construct stone matrices for denture repairs	75
J269 Cutback wax patterns for porcelain or resin-veneer substructures	75
G178 Mark removable appliances with names and social security numbers	75
G144 Add artificial teeth to existing removable partial dentures (RPDs)	75

**TABLE A2**  
**ORTHODONTIC APPLIANCE FABRICATOR JOB**  
**(STG40)**

<b>TASKS</b>	<b>PERCENT PERFORMING</b>
M347 Fabricate athletic mouthguards	100
G172 Disinfect appliances	100
G159 Construct diagnostic casts, other than orthodontic study casts	100
G158 Construct custom impression trays for removable prosthodontics	85
M348 Fabricate bleaching stents	85
G147 Articulate using arbitrary mounting techniques	85
G152 Blockout undercuts on casts	85
G151 Bead and box impressions	85
G178 Mark removable appliances with names and social security numbers	71
G156 Construct custom impression trays for fixed prosthodontics	71
G182 Prepare impressions	71
G167 Construct working casts for orthodontic appliances	71
G173 Disinfect lab equipment or work areas	71
M361 Fabricate hard nightguards	71
G165 Construct orthodontic study casts	71
E118 Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)	71
L331 Fabricate Hawley retainers	57
G181 Perform user maintenance on dental laboratory equipment	57
G179 Mix disinfectant solutions	57
M378 Fabricate surgical stents	57
M359 Fabricate fluoride carriers	57
N384 Don and doff chemical warfare protective equipment	57
N391 Participate in Chemical Warfare Confidence exercises	57
G164 Construct mounting straps	57

**TABLE A3**  
**FIXED RESTORATION FABRICATOR JOB**  
**(STG75)**

<b>TASKS</b>	<b>PERCENT PERFORMING</b>
J293 Wax patterns for fixed restorations	100
J291 Wax metal-ceramic substructure patterns to full contour prior to cutback	100
J274 Fabricate fixed restorations using microscopes	100
J296 Weigh wax patterns prior to investing	96
J284 Invest wax patterns	92
J269 Cutback wax patterns for porcelain or resin-veneer substructures	88
J290 Sprue wax patterns for fixed restorations	88
G147 Articulate using arbitrary mounting techniques	84
J279 Fabricate surveyed crowns	76
D75 Attend continuing education sessions or courses	48
G173 Disinfect lab equipment or work areas	44
J259 Apply die spacers	44
J273 Fabricate fixed restorations using attachments	44
J267 Construct custom incisal guide tables	44
J295 Wax patterns for onlays	44
J262 Blockout undercuts on dies	44
G181 Perform user maintenance on dental laboratory equipment	40
J292 Wax metal-ceramic substructures without waxing to full contour	40
N388 Load or unload patients on patient transportation vehicles	40

**TABLE A4**  
**CROWN FABRICATOR JOB**  
**(STG33)**

TASKS	PERCENT PERFORMING
J288    Seat castings	100
J280    Finish and polish fixed restorations	100
J281    Finish substructures for porcelain applications	90
J261    Assemble fixed partial denture components in matrices for soldering	90
J274    Fabricate fixed restorations using microscopes	81
J289    Solder all-metal fixed restorations	81
J285    Presolder metal-ceramic substructures	72
J287    Recover precious metal grindings or scraps	72
J265    Cast conventional gold alloys	63
J266    Cast metal-ceramic alloys	63
N388    Load or unload patients on patient transportation vehicles	63
J279    Fabricate surveyed crowns	63
G173    Disinfect lab equipment or work areas	54
J286    Recover castings	54
N402    Transport litter patients	54
D75    Attend continuing education sessions or courses	54
J284    Invest wax patterns	54
J263    Burnout wax patterns	54
G147    Articulate using arbitrary mounting techniques	54
J262    Blockout undercuts on dies	54
J264    Cast base metal alloys	45
N392    Participate in Medical Red Flag training sessions	45
J269    Cutback wax patterns for porcelain or resin-veneer substructures	45
J270    Deoxidize gold alloy castings	45
J296    Weigh wax patterns prior to investing	45
J290    Sprue wax patterns for fixed restorations	45
A13    Participate in conferences, or workshops	45

TABLE A5

AREA DENTAL LABORATORY (ADL) CERAMIC PROSTHESES FABRICATOR JOB  
(STG44)

TASKS		PERCENT PERFORMING
K305	Contour fired porcelains	100
K297	Apply and fire over-glaze to ceramic restorations	100
K316	Fire porcelain	100
K303	Apply opaque porcelains	100
K308	Fabricate crowns with porcelain labial margins	100
K325	Surface stain and color correct ceramic restorations	100
K317	Glaze ceramic restorations mechanically	100
K319	Oxidize substructures	92
K298	Apply dentine and enamel porcelains	92
K301	Apply intrinsic stains	92
K307	Etch porcelain laminate veneers	92
K324	Strip porcelain from metal substructures	92
K315	Fabricate porcelain laminate veneers	84
K299	Apply dentine modifiers	84
K302	Apply opaque modifiers	84
K304	Construct refractory dies or casts	84
A13	Participate in conferences, or workshops	84
K318	Glaze porcelain using autogenous method	76
N388	Load or unload patients on patient transportation vehicles	69
K313	Fabricate Maryland (resin bonded) bridges	61
G181	Perform user maintenance on dental laboratory equipment	61
J280	Finish and polish fixed restorations	61
J281	Finish substructures for porcelain applications	61
N384	Don and doff chemical warfare protective equipment	61
K320	Postsolder metal-ceramic restorations	61
K311	Fabricate In-Ceram restorations	53
G173	Disinfect lab equipment or work areas	53
C69	Write EPRs	53
K306	Etch Maryland bridge retainers	53
N381	Assemble tents	53

**TABLE A6**  
**REMOVABLE PARTIAL DENTURE (RPD) FABRICATOR JOB**  
**(STG17)**

TASKS	PERCENT PERFORMING
I257 Wax and adapt components of RPD framework patterns on refractory casts	89
I237 Blockout and relieve RPD master casts	89
I245 Finish and polish RPD frameworks	78
I251 Seat finished RPD frameworks on duplicate master casts	78
G152 Blockout undercuts on casts	78
I249 Prepare RAPs for RPD frameworks	73
N388 Load or unload patients on patient transportation vehicles	73
I254 Solder wrought-wire clasps to RPD frameworks	63
I236 Bend RPD wrought-wire clasps	63
I239 Duplicate RPD master casts to produce refractory or duplicate master casts	57
I238 Burnout and cast RPD investment molds	57
I252 Solder metal frameworks of RPDs electrically	57
I246 Invest wax patterns for RPDs	52
I244 Fabricate swing-lock RPD frameworks	52
I256 Transfer design from RPD diagnostic to master casts	47
D75 Attend continuing education sessions or courses	47
N402 Transport litter patients	47
E118 Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)	42
I241 Fabricate metal denture bases	42
N392 Participate in Medical Red Flag training sessions	42
N381 Assemble tents	42
G143 Adapt artificial teeth to casts and construct indices for reinforced acrylic pontics (RAPs)	36
N384 Don and doff chemical warfare protective equipment	36
N394 Perform basic cardiac life support	36

TABLE A7

SUPPLY JOB  
(STG47)

TASKS	PERCENT PERFORMING
F136 Maintain supply levels	100
F140 Prepare requests for local purchase items	100
F141 Research supply catalogs	100
F123 Establish supply levels	100
F142 Verify supplies received against invoices	100
F138 Order medical supplies using shopping guides	100
F125 Issue supplies	100
F124 Inventory organizational equipment or supplies	100
F134 Maintain custodian action lists	100
F130 Maintain back-order reports	100
F131 Maintain civilian or federal supply catalogs	100
F139 Order nonmedical supplies	100
F128 Maintain AF medical materiel letter (AFMML) files	100
C51 Evaluate dental laboratory supply inventory or storage procedures	85
C49 Evaluate budget requirements	85
F126 Maintain activity issue/turn-in summaries	85
F127 Maintain activity shopping guides	85
F133 Maintain cost-center management folders	85
C52 Evaluate equipment or facility maintenance	71
A19 Prepare equipment justifications	71
A4 Determine requirements for space, personnel, equipment, or supplies	71
F132 Maintain cost-center lists	71
D75 Attend continuing education sessions or courses	71
N402 Transport litter patients	71
A8 Draft budget requirements	57
F135 Maintain property custody authority/custody receipt listings (CA/CRLs)	57
F137 Order medical supplies using medical logistics (MEDLOG) computer system	57
B31 Direct maintenance or utilization of equipment or facilities	57
E114 Maintain resource protection folders	57
B25 Conduct briefings	57

TABLE A8

**DENTAL LABORATORY NCOIC AND SUPERINTENDENT JOB  
(STG35)**

<b>TASKS</b>	<b>PERCENT PERFORMING</b>
C47 Conduct performance feedback worksheet (PFW) evaluation sessions	100
B39 Interpret policies, directives, or procedures for subordinates	95
B27 Counsel personnel on personal or military-related matters	95
A22 Schedule personnel for leaves, passes, or temporary duty (TDY)	95
B38 Improve work methods or procedures	90
C58 Evaluate quality control procedures	90
A16 Plan or schedule work assignments or priorities	90
C69 Write EPRs	90
C53 Evaluate individuals for promotion, demotion, reclassification, or special awards	90
C71 Write recommendations for awards or decorations	90
C59 Evaluate quality of finished prostheses	85
C56 Evaluate personnel for compliance with performance standards	85
C46 Analyze workload requirements	85
D75 Attend continuing education sessions or courses	85
A13 Participate in conferences, or workshops	85
E109 Maintain counseling forms	85
B26 Conduct supervisory orientations of newly assigned personnel	85
B43 Supervise Dental Laboratory Specialists (AFSC 98250)	80
C63 Evaluate work schedules	80
A9 Establish laboratory quality fabrication standards	80
A1 Assign personnel to duty positions	80
A4 Determine requirements for space, personnel, equipment, or supplies	76
E104 File or review DD Forms 2322 (Dental Laboratory Work Authorization)	71
B40 Respond to patient or staff complaints	71
B44 Supervise Dental Laboratory Technicians (AFSC 98270)	66
D83 Counsel trainees on training progress	66
A6 Develop management objectives	66
E118 Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)	66
D74 Assign on-the-job training (OJT) trainers	66
C51 Evaluate dental laboratory supply inventory or storage procedures	66



## **APPENDIX B**

### **LISTING OF MODULES AND TASK STATEMENTS**

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These Task Modules (TMs) were developed in order to organize and summarize the extensive task information for this specialty. The TMs were derived by statistical clustering of the tasks in terms of which tasks are performed by the same incumbents. For example, if an individual performs one documentation task, the probability is very high that he or she also will perform other documentation tasks. Thus, the group of documentation tasks can be considered a "natural group" of associated or related tasks (see TM 0001 below). The statistical clustering generally approximates these "natural groupings."

The title of each TM is our best estimate as to the generic subject content of the group of tasks. The TMs are useful for organizing the task data into meaningful units and as a way to concisely summarize the extensive job data. However, TMs are only one way to organize the information. Other strategies may also be valid.

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#### Listing of Module Statements

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0001	ST0123	Dental Lab Documentation
0002	ST0187	General Lab Maintenance
0003	ST0199	Fixed Restoration Fabrication
0004	ST0173	Fixed Restoration Soldering
0005	ST0213	Precious Metal Duties
0006	ST0246	Ceramic and Porcelain Duties
0007	ST0145	Wax Pattern Duties
0008	ST0251	Orthodontic Appliance Fabrication
0009	ST0298	Denture Repair and Fabrication
0010	ST0196	Denture Tooth Arrangement and Cast Remounting
0011	ST0102	Medical Readiness Activities
0012	ST0079	Denture Base Fabrication
0013	ST0186	Workcenter Management
0014	ST0151	Quality Assurance Activities
0015	ST0116	Supervision Duties
0016	ST0144	Safety/Security Activities
0017	ST0130	Inspection and Evaluation
0018	ST0235	Supply Activities
0019	ST0178	Financial Management
0020	ST0274	Financial Documentation
0021	ST0103	First-Line Supervisor Duties
0022	ST0080	Ceramic Fabrication
0023	ST0074	Field Medical Readiness Activities
0024	ST0082	Civilian Management
0025	ST0149	Orthodontic Fabrication
0026	ST0110	Orthopedic Metal Bands and Wire Duties
0027	ST0113	Retainer Fabrication
0028	ST0091	Complete Denture Base Fabrication
0029	ST0200	Training Program Managers
0030	ST0162	Technical School Instructor Duties
0031	ST0073	Removable Partial Denture Fabrication
0032	ST0072	Metal Denture Base Fabrication

0033 ST0094 Dicor Substructures and Restorations  
 0034 ST0114 Plastic Surgery Appliance Fabrication  
 0035 Tasks not referenced

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**Listing of Task Statements**

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**0001 ST0123 Dental Lab Documentation**

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1	A13	Participate in conferences or workshops
2	B38	Improve work methods or procedures
3	D75	Attend continuing education sessions or courses
4	E104	File or review DD Forms 2322 (Dental Laboratory Work Authorization)
5	E108	Maintain case logbooks
6	E116	Maintain timesheets
7	E118	Record CLV codes on DD Forms 2322 (Dental Laboratory Work Authorization)

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**0002 ST0187 General Lab Maintenance**

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1	G152	Blockout undercuts on casts
2	G172	Disinfect appliances
3	G173	Disinfect lab equipment or work areas
4	G181	Perform user maintenance on dental laboratory equipment
5	G196	Weigh and measure dental laboratory materials

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**0003 ST0199 Fixed Restoration Fabrication**

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1	G147	Articulate using arbitrary mounting techniques
2	J258	Apply die hardeners
3	J259	Apply die spacers
4	J262	Blockout undercuts on dies
5	J263	Burnout wax patterns
6	J265	Cast conventional gold alloys
7	J266	Cast metal-ceramic alloys
8	J269	Cutback wax patterns for porcelain or resin-veneer substructures
9	J270	Deoxidize gold alloy castings
10	J274	Fabricate fixed restorations using microscopes
11	J279	Fabricate surveyed crowns
12	J280	Finish and polish fixed restorations
13	J281	Finish substructures for porcelain applications
14	J284	Invest wax patterns
15	J286	Recover castings
16	J287	Recover precious metal grindings or scraps
17	J288	Seat castings
18	J290	Sprue wax patterns for fixed restorations

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0003	ST0199	Fixed Restoration Fabrication (Continued)
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|----|------|--|
| 19 | J291 | Wax metal-ceramic substructure patterns to full contour prior to cutback |
| 20 | J293 | Wax patterns for fixed restorations                                      |
| 21 | J296 | Weigh wax patterns prior to investing                                    |

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0004	ST0173	Fixed Restoration Soldering
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- |   |      |   |
|---|------|---|
| 1 | J260 | Assemble fixed partial denture components for soldering using acrylic resin |
| 2 | J261 | Assemble fixed partial denture components in matrices for soldering         |
| 3 | J264 | Cast base metal alloys  |
| 4 | J285 | Presolder metal-ceramic substructures                                       |
| 5 | J289 | Solder all-metal fixed restorations   |

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0005	ST0213	Precious Metal Duties
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- |   |      |   |
|---|------|---|
| 1 | E100 | Annotate filing cabinet or safe security forms            |
| 2 | E105 | Lock up precious metals and alloys                        |
| 3 | E110 | Maintain dental registers of precious metals and alloys   |
| 4 | J275 | Fabricate post and cores using direct pattern technique   |
| 5 | J276 | Fabricate post and cores using indirect pattern technique |

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0006	ST0246	Ceramic and Porcelain Duties
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- |    |      |  |
|----|------|--|
| 1  | K297 | Apply and fire over-glaze to ceramic restorations    |
| 2  | K298 | Apply dentine and enamel porcelains                  |
| 3  | K299 | Apply dentine modifiers                              |
| 4  | K301 | Apply intrinsic stains                               |
| 5  | K302 | Apply opaque modifiers                               |
| 6  | K303 | Apply opaque porcelains                              |
| 7  | K305 | Contour fired porcelains                             |
| 8  | K308 | Fabricate crowns with porcelain labial margins       |
| 9  | K316 | Fire porcelain                                       |
| 10 | K317 | Glaze ceramic restorations mechanically              |
| 11 | K318 | Glaze porcelain using autogenous method              |
| 12 | K319 | Oxidize substructures                                |
| 13 | K324 | Strip porcelain from metal substructures             |
| 14 | K325 | Surface stain and color correct ceramic restorations |

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0007	ST0145	Wax Pattern Duties
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|---|------|--|
| 1 | J267 | Construct custom incisal guide tables                          |
| 2 | J273 | Fabricate fixed restorations using attachments                 |
| 3 | J292 | Wax metal-ceramic substructures without waxing to full contour |
| 4 | J294 | Wax patterns for inlays  |
| 5 | J295 | Wax patterns for onlays  |

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**0008 ST0251 Orthodontic Appliance Fabrication**

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|----|------|---|
| 1  | G148 | Articulate using facebow transfers                                    |
| 2  | G151 | Bead and box impressions  |
| 3  | G153 | Bulk trim dies  |
| 4  | G156 | Construct custom impression trays for fixed prosthodontics            |
| 5  | G158 | Construct custom impression trays for removable prosthodontics        |
| 6  | G159 | Construct diagnostic casts, other than orthodontic study casts        |
| 7  | G160 | Construct master casts for complete dentures                          |
| 8  | G161 | Construct master casts for RPDs                                       |
| 9  | G167 | Construct working casts for orthodontic appliances                    |
| 10 | G168 | Construct working casts with removable dies using Pindex-type systems |
| 11 | G178 | Mark removable appliances with names and social security numbers      |
| 12 | G182 | Prepare impressions   |
| 13 | G183 | Prepare saturated calcium sulphate dihydrate solutions (SDSs)         |
| 14 | G184 | Prepare slurry water  |
| 15 | G189 | Repolish prostheses after clinical adjustments                        |
| 16 | G191 | Soak casts in SDS   |
| 17 | M347 | Fabricate athletic mouthguards  |
| 18 | M361 | Fabricate hard nightguards  |

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**0009 ST0298 Denture Repair and Fabrication**

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|----|------|--|
| 1  | G144 | Add artificial teeth to existing removable partial dentures (RPDs)                 |
| 2  | G155 | Construct casts for denture repairs  |
| 3  | G166 | Construct stone matrices for denture repairs                                       |
| 4  | G186 | Repair complete or partial denture bases, except replacing broken or missing teeth |
| 5  | G188 | Replace broken or missing artificial teeth on complete or partial denture bases    |
| 6  | H198 | Arrange artificial teeth for balanced occlusions                                   |
| 7  | H199 | Arrange artificial teeth for cross-bite occlusions                                 |
| 8  | H201 | Arrange artificial teeth for monoplane occlusions                                  |
| 9  | H202 | Arrange artificial teeth for RPDs  |
| 10 | H203 | Arrange artificial teeth opposing natural dentitions                               |
| 11 | H204 | Boil out wax from molds  |
| 12 | H210 | Deflask complete dentures or RPDs  |
| 13 | H215 | Fabricate immediate complete dentures or RPDs                                      |
| 14 | H216 | Fabricate interim RPDs   |
| 15 | H220 | Fabricate record bases and occlusion rims  |
| 16 | H223 | Finish and polish denture bases  |
| 17 | H225 | Flask complete dentures  |
| 18 | H226 | Flask RPDs   |
| 19 | H227 | Pack and cure complete denture molds   |
| 20 | H228 | Perform selective grinding procedures  |
| 21 | H231 | Reline complete dentures or RPDs   |
| 22 | H232 | Remount dentures or RPDs   |
| 23 | H233 | Select artificial teeth  |
| 24 | H234 | Split pack and cure RPD denture molds  |
| 25 | H235 | Wax-up denture bases for processing  |

0010	ST0196	Denture Tooth Arrangement and Cast Remounting
1	G185	Rebase complete dentures
2	H200	Arrange artificial teeth for lingualized occlusions
3	H205	Characterize complete denture bases or RPDs
4	H206	Characterize tooth arrangements
5	H208	Construct remount casts
6	H209	Construct remounting indices
7	H217	Fabricate overdentures for conventional abutments
8	H222	Fabricate teeth for RPDs using tooth-shaded acrylic
0011	ST0102	Medical Readiness Activities
1	N381	Assemble tents
2	N384	Don and doff chemical warfare protective equipment
3	N385	Identify chemical warfare agents
4	N388	Load or unload patients on patient transportation vehicles
5	N391	Participate in Chemical Warfare Confidence exercises
6	N392	Participate in Medical Red Flag training sessions
7	N393	Perform area security duties
8	N394	Perform basic cardiac life support
9	N395	Perform chemical warfare decontamination procedures
10	N402	Transport litter patients
0012	ST0079	Denture Base Fabrication
1	G157	Construct custom impression trays for implants
2	H197	Adapt prefabricated gingival or palatal patterns to the wax-up of complete denture or RPD bases
3	H207	Color-modify denture bases
4	H224	Flask complete denture or RPD base wax-ups using insulating paste, such as Dent-Kote
0013	ST0186	Workcenter Management
1	B26	Conduct supervisory orientations of newly assigned personnel
2	B27	Counsel personnel on personal or military-related matters
3	B39	Interpret policies, directives, or procedures for subordinates
4	B41	Supervise Apprentice Dental Laboratory Specialists (Air Force Specialty Code (AFSC) 98230)
5	B43	Supervise Dental Laboratory Specialists (AFSC 98250)
6	C46	Analyze workload requirements
7	C47	Conduct performance feedback worksheet (PFW) evaluation sessions
8	C53	Evaluate individuals for promotion, demotion, reclassification, or special awards
9	C56	Evaluate personnel for compliance with performance standards
10	C58	Evaluate quality control procedures
11	C59	Evaluate quality of finished prostheses

0013	ST0186	Workcenter Management (Continued)
12	C69	Write EPRs
13	D79	Conduct OJT
14	D83	Counsel trainees on training progress
0014	ST0151	Quality Assurance Activities
1	A1	Assign personnel to duty positions
2	A6	Develop management objectives
3	A9	Establish laboratory quality fabrication standards
4	A12	Establish work methods, production controls, or inspection procedures
5	A16	Plan or schedule work assignments or priorities
6	A22	Schedule personnel for leaves, passes, or temporary duty (TDY)
7	B32	Implement continuing education programs or procedures
8	B37	Implement self-inspection programs or procedures
9	B40	Respond to patient or staff complaints
10	C48	Evaluate administrative files or procedures
11	C50	Evaluate continuing education programs
12	C63	Evaluate work schedules
13	C71	Write recommendations for awards or decorations
14	E106	Maintain administrative files
15	E109	Maintain counseling forms
16	E111	Maintain local quality assurance forms
17	E120	Verify accuracy of Base Dental Service Reports (BDSRs)
18	F122	Assign personnel to receive supplies or precious metals
0015	ST0116	Supervision Duties
1	A2	Assign sponsors for newly assigned personnel
2	A18	Plan staff meetings, conferences, or workshops
3	A23	Write job descriptions
4	B42	Supervise civilians
5	B44	Supervise Dental Laboratory Technicians (AFSC 98270)
6	C65	Indorse enlisted performance reports (EPRs)
7	D74	Assign on-the-job training (OJT) trainers
0016	ST0144	Safety/Security Activities
1	A17	Plan safety programs
2	B29	Direct hazardous chemicals programs
3	B34	Implement hazardous chemicals programs or procedures
4	B36	Implement safety programs or procedures
5	C60	Evaluate resource protection programs
6	C61	Evaluate safety programs
7	C67	Perform safety inspections



0017	ST0130	Inspection and Evaluation
1	B30	Direct maintenance of administrative or technical files
2	C54	Evaluate inspection report findings
3	C62	Evaluate suggestions
4	E107	Maintain administrative publications
0018	ST0235	Supply Activities
1	F123	Establish supply levels
2	F124	Inventory organizational equipment or supplies
3	F125	Issue supplies
4	F126	Maintain activity issue/turn-in summaries
5	F127	Maintain activity shopping guides
6	F130	Maintain back-order reports
7	F131	Maintain civilian or federal supply catalogs
8	F136	Maintain supply levels
9	F138	Order medical supplies using shopping guides
10	F139	Order nonmedical supplies
11	F140	Prepare requests for local purchase items
12	F141	Research supply catalogs
13	F142	Verify supplies received against invoices
0019	ST0178	Financial Management
1	A8	Draft budget requirements
2	B31	Direct maintenance or utilization of equipment or facilities
3	C49	Evaluate budget requirements
4	C52	Evaluate equipment or facility maintenance
0020	ST0274	Financial Documentation
1	F128	Maintain AF medical materiel letter (AFMML) files
2	F132	Maintain cost-center lists
3	F133	Maintain cost-center management folders
4	F134	Maintain custodian action lists
0021	ST0103	First-Line Supervisor Duties
1	B33	Implement cost-reduction programs or procedures
2	D96	Select individuals for specialized training
3	E103	Complete quarterly Dental Service Management Reports
4	E112	Maintain manpower authorization documents

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0022	ST0080	Ceramic Fabrication
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|---|------|--------------------------------------|
| 1 | K304 | Construct refractory dies or casts   |
| 2 | K306 | Etch Maryland bridge retainers       |
| 3 | K307 | Etch porcelain laminate veneers      |
| 4 | K311 | Fabricate In-Ceram restorations      |
| 5 | K315 | Fabricate porcelain laminate veneers |

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0023	ST0074	Medical Readiness Activities
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|----|------|---|
| 1  | N382 | Count and record pulses                         |
| 2  | N383 | Count and record respirations                   |
| 3  | N386 | Interpret compasses                             |
| 4  | N387 | Interpret maps                                  |
| 5  | N390 | Operate field communications equipment          |
| 6  | N396 | Perform field sanitation and hygiene procedures |
| 7  | N401 | Read and record blood pressures                 |
| 8  | N403 | Treat burns                                     |
| 9  | N404 | Treat fractures                                 |
| 10 | N405 | Treat hemorrhages                               |
| 11 | N406 | Treat shock                                     |
| 12 | N407 | Treat wounds                                    |

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0024	ST0082	Civilian Management
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|---|------|---|
| 1 | C64  | Indorse civilian performance appraisals |
| 2 | C68  | Write civilian performance appraisals   |
| 3 | E99  | Annotate civilian timesheets            |
| 4 | E115 | Maintain study reference files          |

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0025	ST0149	Orthodontic Fabrication
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|----|------|--|
| 1  | L327 | Fabricate fixed rapid palatal expansion appliances                     |
| 2  | L328 | Fabricate fixed space maintainers                                      |
| 3  | L329 | Fabricate fixed transpalatal appliances                                |
| 4  | L332 | Fabricate inclined bite planes   |
| 5  | L333 | Fabricate lingual arch appliances                                      |
| 6  | L334 | Fabricate Nance appliances   |
| 7  | L335 | Fabricate removable palatal expansion appliances                       |
| 8  | L336 | Fabricate tongue thrust appliances                                     |
| 9  | L345 | Section orthodontic casts and reposition segments for ideal occlusions |
| 10 | L346 | Solder orthodontic appliances, other than for repair                   |

0026	ST0110	Orthopedic Metal Bands and Wire Duties
1	L338	Fabricate W-arch appliances
2	L339	Heat treat wires to harden them
3	L340	Heat treat wires to soften them
4	L343	Reposition metal bands in alginate impressions
0027	ST0113	Retainer Fabrication
1	L326	Fabricate bionators
2	L330	Fabricate Frankel appliances
3	L337	Fabricate Tri-tain retainers
4	L344	Reseat metal bands loosened during shipments
0028	ST0091	Complete Denture Base Fabrication
1	H211	Fabricate complete denture bases or RPDs retained with dental implant devices
2	H212	Fabricate complete dentures or RPDs using cutter bars
3	H213	Fabricate complete dentures or RPDs using metal occlusals
4	H218	Fabricate overdentures using attachments
5	H219	Fabricate overdentures using metal mini-bases
0029	ST0200	Training Program Managers
1	D84	Determine training requirements, such as OJT, CPR, or resident course requirements
2	D89	Direct or implement training programs
3	D90	Evaluate performance of instructors or trainees
4	D91	Evaluate training methods, techniques, or programs
0030	ST0102	Technical School Instructor Duties
1	D73	Administer or score tests
2	D80	Conduct resident course classroom training
3	D86	Develop performance tests
4	D87	Develop resident course curriculum materials
5	D94	Prepare lesson plans
6	D97	Write test questions
0031	ST0073	Removable Partial Denture Fabrication
1	I237	Blockout and relieve RPD master casts
2	I238	Burnout and cast RPD investment molds
3	I239	Duplicate RPD master casts to produce refractory or duplicate master casts
4	I245	Finish and polish RPD frameworks
5	I246	Invest wax patterns for RPDs
6	I248	Prepare blockout wax
7	I249	Prepare RAPs for RPD frameworks
8	I251	Seat finished RPD frameworks on duplicate master casts

0031	ST0073	Removable Partial Denture Fabrication (Continued)
9	I252	Solder metal frameworks of RPDs electrically
10	I254	Solder wrought-wire clasps to RPD frameworks
11	I255	Survey and design casts for RPD frameworks
12	I256	Transfer design from RPD diagnostic to master casts
13	I257	Wax and adapt components of RPD framework patterns on refractory casts
0032	ST0072	Metal Denture Base Fabrication
1	I241	Fabricate metal denture bases
2	I242	Fabricate metal mini-bases for overdentures
3	I243	Fabricate RPD frameworks using precision attachments
4	I244	Fabricate swing-lock RPD frameworks
5	I247	Perform RPD diagnostic wax-ups and cutbacks for light-cured resin
6	I250	Prepare tube teeth for RPD frameworks
0033	ST0094	Dicor Substructures and Restorations
1	K300	Apply Dicor-Plus porcelains to Dicor substructures
2	K309	Fabricate Dicor restorations
3	K310	Fabricate Dicor substructures
4	K314	Fabricate porcelain jacket crowns
5	K322	Shade Dicor restorations
0034	ST0114	Plastic Surgery Appliance Fabrication
1	M365	Fabricate nasal stents
2	M368	Fabricate palatal lifts
3	M372	Fabricate plastic surgery silicone implants
4	M374	Fabricate radiation stents